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MONTHLY CYCLOPÆDIA

and Medical Bulletin

(OF)

(PRACTICAL MEDICINE.)

EDITED BY

CHARLES E. DE M. SAJOUS, M.D.,

PHILADELPHIA.

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Announcement.

THE INTERNAL SECRETIONS AND THE PRINCIPLES OF MEDICINE.¹

By C. E. DE M. SAJOUS, M.D.,
PHILADELPHIA.

THE late Professor Virchow once remarked with his characteristic frankness: "We must not deceive ourselves or one another in respect to the present condition of medical science. Unmistakably, medical men are tired of the many new hypothetical systems that are thrown aside as rubbish only to be replaced by similar ones. We shall soon see that observation and experiments alone have permanent value." Two years ago, Prof. William Osler expressed kindred views in a general summary of the progress of medicine during the nineteenth century, and radical expressions of a similar kind are not infrequently met with in current medical literature.

When, early in the year 1888, we wrote the first "Preface" of the "Annual of

¹ PREFACE AND SUMMARY OF CONTENTS OF Volume I of a work by the author to appear in February under the same title as this announcement.

the Universal Medical Sciences," the purpose of the work was defined in the following words: "It is expected to become a helpmate to the practitioner in his efforts to relieve suffering, and to assist the investigator by correlating facts, thus enabling him to better compare." The successor of the "Annual," the "Analytical Cyclopædia of Practical Medicine," was framed with the same underlying thought as guide. It is not within our power to state whether these purposes have at all been attained, or whether, apart from their immediate usefulness to the practicing physician, these works have ever opened new channels of thought; we can say, however, that we have always deemed it our duty to closely follow the development of the various branches of medical science as the yearly panorama passed before our eyes, in the hope that we might eventually collate the necessary elements for a more solid foundation than Medicine now possesses. The present volume is submitted to the profession as the result of our efforts in this direction.

The pre-eminent impression which has been our beacon in the preparation of this work differs somewhat from the interpretation of the status of medical science published by the distinguished authors mentioned, in that we have been led to regard the majority of hypothetical conceptions now interspersed throughout the many subdivisions of medical science as temporary, though artificial, factors. Our knowledge of a given disease, for example, might, as viewed from our standpoint, be compared to a chain in which the majority of links are of gold and the rest of lead, pending the acquisition of sufficient gold to replace the lead. Thus construed, Medicine seems to us to acquire its proper position among allied sciences, while the many investigators who have devoted their life to its welfare and progress also find their labors fitly represented in its annals. Indeed, the list of these patient workers should be greatly increased if the views submitted in this volume are sound, for the data contained therein—the very ones that have presented the strongest claims to recognition—were found in literature of the kind that often lies dormant many years before its true worth is brought to light. That thousands of such contributions exist we were able to ascertain: an auspicious feature of our earlier work, which showed that we were not dependent upon the "observations and experiments" the future alone would contribute to begin the elimination of "theoretical systems" and replace them, if possible, with others of a more durable kind.

Our earlier investigations included a careful review of prevailing doctrines concerning the nature of vital processes, particularly in respect to the physiological chemistry of cellular metabolism. Notwithstanding our intense desire to acquire elucidative data from the existing literature of the subject, we found it impossible to advance one step beyond the position taken by Professor Foster in 1895 when he wrote: "We cannot trace the oxygen through its sojourn in the tissues. We only know that sooner or later it comes back combined in carbonic acid (and other

matters not now under consideration).” To us, this meant a closed door precisely where we hoped to find the information required to fill numerous gaps in our knowledge of the majority of diseases. Tissue-respiration being obviously the dominant factor of all the problems we hoped to solve, we thought it advisable to leave the beaten paths and seek clues among subjects which had never been associated with this physiological function.

Among the subjects which had received attention during our preliminary inquiry was the physiology of the ductless glands. Although the thyroid body had been studied by a larger number of investigators than the adrenals, the latter seemed to us to present a feature directly connected with the problem: *i.e.*, the marked affinity of adrenal extractives for oxygen. We therefore determined to follow the clue this afforded as far as recorded facts would permit, and to trace its connections beyond the field of physiology if possible.

Still, we had little else at our disposal than experiments performed in animals to elucidate the intrinsic functions of these organs. Could such experiments be considered as safe guides in our inquiry? We deemed it advisable to ascertain, first of all, whether the physiological functions of the adrenals were sufficiently similar in all vertebrates to warrant the use of experimental data obtained with lower animals in the study of these organs in man. Such proved undoubtedly to be the case, and we cannot but feel that the results of our investigations—those we will now submit—are based upon solid premises. Indeed, the importance of this fact asserted itself when we were brought to realize that the adrenals could be considered as the key not only to tissue-respiration, but also to the functions of all other organs now classed as “ductless glands.” And even these developments assumed secondary positions when it became evident that the better-known organs, such as the heart, lungs, liver, etc., were, so to say, subsidiary structures, the instruments, in a measure, of the smaller “ductless glands,” and destined to fulfill the mandates of the latter.

The secretions of the adrenals was traced as far as the pulmonary alveoli, but not beyond. Here it was found to hold in combination the various constituents of hæmoglobin, and to endow both the latter and the plasma with their affinity for oxygen. Prevailing views as to the chemistry of respiration were thus radically transformed, and our knowledge of the manner in which the blood-pigments were held together, likewise. We likewise ascertained that methæmoglobin (hæmatin) and hæmatoporphyrin (hæmatoïdin) were the component bodies of hæmoglobin thus held in association, and that hæmoglobinuria, methæmoglobinuria, and hæmatoporphyrinuria indicated successive stages of hæmoglobin dissociation incident upon adrenal insufficiency. Again, this portion of the inquiry revealed that, while hæmoglobin absorbed its share of adrenal secretion and oxygen, the plasma did likewise. It thus became evident that the red corpuscles were not the

only carriers of oxygen, and that the blood-plasma played an important part in the distribution of this gas. Indeed, we subsequently ascertained that the red corpuscles were secondary factors in this important function, *i.e.*, mere carriers, pack-mules, as it were, and that it was the oxygen-laden adrenal secretion dissolved in the plasma itself which carried on all the oxidation processes of the organism.

Of course, it became necessary to control this assertion. Physiological chemistry was found to afford ample confirmatory evidence, the investigations of Schmiedeberg, Jaquet, Abelous and Biarnés, Salkowski, and others having shown the presence in the plasma of an "oxidation ferment." Claude Bernard had also, many years before, discovered a "ferment" in the blood: the identical substance which Lépine subsequently termed the "glycolytic ferment." These bodies we also found to correspond with our oxygen-laden adrenal secretion—for which, by the way, we would venture to suggest the name *adrenoxin*, though in the body of the present work it is termed everywhere "oxidizing substance."

The many physiological problems awaiting solution then appeared to us in quite a new light. The ease with which the oxygen carried by the plasma could penetrate the minute vascular net-works of all cellular elements not only furnished a clue to the physiological chemistry of the latter, but it also led to the discovery that various structures the functions of which were unknown were in reality blood-channels, or rather plasma-channels. Thus, the axis-cylinders of all nerves and the dendrites of neurons were found to contain a fluid identical to blood-plasma in its reactions to staining fluids. Even the neuroglia-fibrils asserted their identity as plasma-capillaries, the neuroglia felt-work of the substance of the brain and cord representing the intrinsic circulation of these organs. The muscular contractile structures, the various glandular organs, including the liver, pancreas, and spleen, the gastric and intestinal glandular elements, etc., were all found to be so disposed as to allow the free circulation of this oxidizing plasma, the red corpuscles passing on in the larger channels. An exception to this rule was found, however, in the heart-muscle: Oliver and Schäfer, as is well known, ascribed to the adrenal secretion the power to contract muscular tissue, and particularly cardiac muscle. We found that contraction of the heart-walls was, in great part, due to this secretion, and that the latter penetrated the heart-substance by way of the Thebesian foramina. The coronary arteries did not lose their functional importance, however; they also were found to supply the cardiac muscle-fibers with oxidizing substance.

Still, the mere presence of oxygen in organic combination in cellular elements did not account, of course, for the physical phenomena witnessed, and it became necessary to ascertain the identity of the agencies with which the oxygen of the plasma combined. In the muscular elements myosinogen proved to be the primary source of residual energy. When combined with the oxidizing substance

of the plasma, this organic body liberated, we ascertained, the mechanical energy required for a given contraction, the nerves serving only to incite and govern muscular function. The blood was also found to be supplied with a body similar to myosinogen, *i.e.*, fibrinogen, which likewise combined, but in fixed quantities, with a corresponding proportion of the plasma's oxygen. The fluctuations of the blood's temperature were traced to corresponding variations in the quantities of fibrinogen supplied to the plasma. In the nervous system the immanent source of functional energy was found to be the myelin, or white substance of Schwann, its active constituent being lecithin, composed mainly of hydrocarbons and containing considerable phosphorus. This myelin was not only found to surround the axis-cylinders of all nerves, but also to line the inner surface of the dendrites of neurons and to form the ground-substance of their cell-body. It thus became apparent that the entire nervous system was built upon the same plan: *i.e.*, cylinders containing oxygen-laden plasma surrounded by a layer of myelin, and that the reaction between these two bodies served to form and liberate nervous energy.

The overwhelming importance of the internal secretion of the adrenals having been determined, the functions of the other ductless glands were studied. Our investigation then showed that the adrenals were directly connected with the *anterior pituitary body* through the solar plexus, the splanchnic nerves, and the cervico-thoracic ganglia of the sympathetic. Indeed, this diminutive organ, hardly as large as a pea, and now thought to be practically functionless, proved to be the most important organ of the body, as governing center of the adrenals, and, therefore, of all oxidation processes.

In general diseases what has been termed the patient's "vitality," or "vital resistance," thus became ascribable to fluctuations in the anterior pituitary body's functional efficiency. In other words, overactivity of this organ, by correspondingly enhancing the production of adrenal secretion, was found to increase metabolism and the activity of all functions in proportion; while depression of its normal activity, by inhibiting the production of adrenal secretion and thus reducing the quantity of oxygen distributed throughout the entire organism, proportionally lowered the activity of all vital processes. But the manner in which the functional efficiency of this organ was maintained had also to be elucidated. This led us to the *thyroid gland*, whose physiological purpose, we found, was to sustain the functional efficiency of the anterior pituitary body up to a certain standard by means of its secretion: iodine in organic combination. Excessive production of this secretion, by causing overstimulation of the anterior pituitary body, gave rise, when prolonged, to "exophthalmic goiter"; while reduced production of thyroid secretion, by inhibiting the functions of the anterior pituitary body, caused myxœdema. The thyroid gland, the anterior pituitary, and the adrenals

were thus found to be functionally united: *i.e.*, to form an autonomous system, which we termed the "adrenal system."

Further investigation in this direction showed that the action of thyro-iodine upon the anterior pituitary body represented that of *any* poison introduced into the blood-stream. In other words, it became evident that, instead of acting directly upon the blood or cellular elements, poisons either stimulated or depressed the functional activity of the adrenal system, thus increasing or reducing the production of adrenal secretion, and, therefore, of oxidizing substance in the plasma. Radical changes in prevailing doctrines as to the manner in which general infections, or other forms of poisoning, produced their effects on the organism thus seemed to impose themselves. In fact, the mass of confirmatory evidence found on all sides (including the effects of removal of the adrenals, the thyroid, or the anterior pituitary body, and of the use of adrenal and thyroid extracts) proved to be incontrovertible. We were thus led to conclude that what are now considered as symptoms of infection or poisoning are all manifestations, more or less severe, of *overactivity or insufficiency of the adrenal system*. Indeed, *the physiological action of remedies was also traced to the anterior pituitary body*, the governing center of this system.

The bearing of this discovery upon the prevailing interpretation of the pathogenesis and treatment of disease is well shown by the manner in which it at once elucidated our knowledge of even the greater scourges of humanity. The symptomatology of Asiatic cholera, for example, was found to be a counterpart of the symptom-complex of advanced adrenal insufficiency, and due to the effects of cholera-toxins upon the anterior pituitary body. The only treatment of any value whatever, as is well known, is early and active stimulation: *i.e.*, the use of agents which, as does the thyroid's active principle, reawaken the functional activity of this organ. Cholera infantum, arsenic poisoning, various toxalbumins, and other intoxications produce identical symptoms; all these proved likewise to be syndromes due primarily to adrenal insufficiency. Pulmonary tuberculosis also asserted its identity as a disease due to lowered functional activity of the adrenal system: either inherited or acquired. While "lowered vitality" had become the result of such a state; here it meant, besides, impaired *cardiac* activity and a corresponding malnutrition of the pulmonary tissues, the underlying factor of vulnerability to the effects of the tubercle bacillus. Our main resource, a high altitude, enhances, we well know, the heart's activity and simultaneously the nutrition of the lungs themselves, as well as that of all other organs, including those of the adrenal system. A multitude of agents have been found helpful in this dread disease, including Koch's tuberculin. All proved to be adrenal stimulants. Syphilis likewise revealed itself as due to adrenal insufficiency. Here, however, it was of gradual development, the terminal stages being attended with

actual death of circumscribed areas of the peripheral tissues: those, indeed, most liable to succumb to denutrition. In "secondary" syphilis a powerful stimulant of the adrenal system, mercury, is efficacious; later on, in the "tertiary" form, a still more powerful agent is required, *i.e.*, Nature's own stimulant: iodine.

We were also led to conclude, in this connection, that the majority of drugs, toxins, physiological toxalbumins, etc., *stimulated* the adrenal system, when the proportion of these agents in the blood did not exceed a certain limit, and that when this limit was exceeded, *i.e.*, when the dose administered, or the amount of toxins secreted by bacteria, etc., was excessive, it either *inhibited* or *arrested* the functions of this system. A large dose of quinine may, for instance, cause adrenal overactivity, a flushed face, a bounding pulse, etc.; but, if the dose is excessive, it will overwhelm the adrenal system, the signs of which are always similar, *i.e.*, pallor, a weak and rapid pulse, etc. Pneumonia illustrates a similar course of events, but due to toxins; the erethic stage exemplifies excessive functional activity of the adrenal system: a protective process, "fever," having for its purpose the conversion of pathogenic elements into benign waste-products by cleavage and oxidation. When the proportion of toxins increases notwithstanding this protective function, the adrenal system lapses into insufficiency, that stage during which active stimulation—of the adrenal center, the anterior pituitary body—is our sheet-anchor.

This brought to light a number of diseases: tetanus, epilepsy, hydrophobia, septicæmia, eclampsia, and kindred disorders, in which symptomatic treatment could prove harmful. In tetanus, for example, the convulsions normally suggest the use of cannabis Indica, the bromides, etc., as sedatives or depresso-motors. In the light of our views, precisely the opposite course is indicated, *i.e.*, active stimulation of the adrenal system, because the convulsions are not due to the tetanus toxins, but to accumulated waste-products. Indeed, the effect of this toxin is to gradually reduce the efficiency of the adrenal system and of all oxidation processes accordingly. The present mortality of tetanus sustains us, especially when compared with the results of Baccelli's carbolic-acid treatment. As interpreted from our standpoint, this agent powerfully stimulates the adrenal system, and simultaneously causes prompt oxidation of the waste-products. Baccelli, we know, saves almost all of his cases. The same may be said of hydrophobia; here again the method of treatment employed in the various Pasteur Institutes insures precisely what Baccelli does with the aid of carbolic acid: in suitable doses, the extract of desiccated cord injected raises the anterior pituitary body's functions to their normal standard and sustains them until all danger is past.

The element of specificity would seem to be lost with the anterior pituitary body as the source of all symptomatic phenomena. But such was not found to be the case by any means. The adrenal system showed itself as the source of a

large number of symptoms, but not of all. Each pathogenic agent, a toxin, a vegetable poison, a venom, for example, influences the adrenal center in its own way. Some drugs—quinine, for instance—are able to raise the adrenal system's functional activity to a very high state before they cause it to lapse into insufficiency; others, such as hydrocyanic acid, almost at once overwhelm it. Between these two extremes are many degrees of functional activity, each of which gives rise to symptoms essentially ascribable not only to the adrenal system itself, but also to other organs which are gradually awakened to inordinate activity as the oxidation processes become more active. Among these other organs, the *posterior* pituitary body (or infundibular lobe of the hypophysis), the spleen, and the pancreas, require special mention in this connection, since we found them to be endowed with functions which had not so far been discerned.

The *posterior pituitary body*, far from being the insignificant vestigial organ it is generally thought to be, was found by us, thanks mainly to the investigations of Berkley, Andriezen, Howell, and de Cyon, to stand second in importance only to its mate, the anterior pituitary body. Indeed, it proved to be the *chief functional center of the nervous system*, its numerous groups of neurons forming the starting-point, or highly specialized center, of a single class of nerves. The various medullary centers thus became mere connecting nuclei, which, stimulated or injured, however, could become the source of all the morbid phenomena recorded by physiologists. The posterior pituitary body also proved to be the center upon which all emotions, shock,—psychical or traumatic,—and kindred sources of excitement or depression react, impairment of its functions accounting for the pathological phenomena now ascribed to such causes. Again, as the general center of the nervous system, it was found to be the anterior pituitary body's co-center in sustaining the cellular metabolism of all organs. While the anterior pituitary body insured oxygenation of the blood through the adrenal secretion, the posterior pituitary body adjusted and governed the functional activity of all organs through the nervous system. This accounts for the fact that both cerebral hemispheres can be removed from various animals without materially impairing the functions of their motor, vascular, respiratory, and nutritive systems. But it also suggests that an organ so sensitive to external impressions should likewise be easily influenced, directly or indirectly, whenever pathogenic agencies, poisons, drugs, etc., are present in the blood. Indeed, we ascertained that the posterior pituitary was an important feature of the morbid process in influenza, hay fever, hysteria, catalepsy, and other obscure affections.

The *pancreas and spleen* may be considered jointly, since, as long ago asserted by Schiff, the secretions of these two organs unite in the formation of a powerful proteolytic ferment, a process subsequently defined by Herzen as the one leading to the conversion of trypsinogen into trypsin: the albumin-solving constituent

of the pancreatic juice. While confirming this view, our own analysis led to the conclusion that, in addition to the trypsin supplied to the intestinal canal, a portion of this ferment passed into the splenic vein as an *internal secretion* and thence into the portal vein. We also ascertained that this ferment played a leading part in all immunizing processes, its main function in the blood-stream being to destroy toxic albuminoids. These, as is well known, include all toxins and diastases secreted by bacteria, proteids, toxalbumins, vegetable poisons, and venoms.

Immunity, or rather the various subjects usually grouped under this heading, seems to us to have also acquired a number of elucidative factors. The investigations of Metchnikoff, Ehrlich, Bordet, Pfeiffer, and others were not only sustained in many particulars, but the solidity of many of their deductions was shown by the fact that the addition of considerable new evidence only served to harmonize their views. Phagocytosis proved to be the preponderating factor of immunizing processes; but the spleno-pancreatic internal secretion, trypsin, to which we have just referred as the organic body which reduced toxic albuminoids to inert cleavage products, was found to be the agency which digested bacteria in the digestive vacuoles of phagocytic leucocytes. Indeed, Metchnikoff had found this body to be a trypsin.

The multiplicity of antitoxins, cytolsins, and haptophore groups which Ehrlich connected with his side-chain theory no longer seemed necessary in the light of our views, the diversity of effects due to toxins, as in the case of poisons, drugs, etc., being ascribable to sundry factors, and especially to variations in their toxicity. Rid of these confusing elements, Ehrlich's labors appeared to us in a new light. His amboceptor (Bordet's sensitizing substance) proved to be our oxidizing substance, and his complement (Buchner's alexins, Metchnikoff's cytases) became our spleno-pancreatic internal secretion: trypsin. But we were led, in addition, to ascribe to an organic body which we have already mentioned, fibrinogen, a preponderating part in the process through which all albuminoid poisons (including toxins) and bacteria are converted into benign products in the blood. Indeed, we found that this process required the simultaneous co-operation of the *three* agencies named, trypsin only becoming sufficiently active as a proteolytic agent in the presence of given proportions of oxidizing substance and fibrinogen. Insufficiency of either of these three bodies was found to compromise the issue of the disease in which it occurred. In typhoid fever, for instance, fibrinogen was shown by our investigation to be the missing agency; in diphtheria it was trypsin which was found absent from the blood-stream. Indeed, the dominant active principle of antitoxin proved to be trypsin.

The white corpuscles of the blood were found to be endowed with functions greatly exceeding in importance any as yet ascribed to them even hypothetically. Our researches showed that these cells supplied the organism with the agencies

that combine with the oxidizing substance to insure the continuation of life and the efficiency of all organic functions. The neutrophiles, Metchnikoff's wandering phagocytes, were traced from the solitary and agminated follicles to the cavity of the intestine, where they ingested proteids; then through the villi, mesenteric veins, and portal veins, where they absorbed the spleno-pancreatic secretion, *i.e.*, the trypsin which Metchnikoff found them to contain. These cells formed, we ascertained, *peptones*, *myosinogen*, and *fibrinogen*—all globulins—from the proteids ingested by them and distributed these products to all tissues, the muscles, and the blood itself. Ehrlich's eosinophiles, non-phagocytic leucocytes, asserted their identity as daughter-cells, the separation from their parent-cells, the neutrophiles, occurring in the liver by mitosis. They were traced to the pulmonary alveoli, where they participated in the formation of the nucleated epithelium. Their product proved to be *hæmoglobin*. The basophiles were found to take up fats derived from foodstuffs which penetrated the lacteals and lymphatic ducts, to convert them into *myelin* granules, and to distribute them throughout the entire nervous system.

As these three varieties of leucocytes (all other varieties being probably immature cells) were traced to the right auricle, either through the inferior or superior vena cava, the presence of all three in the lungs appeared necessary as controlling evidence. Indeed, Virchow, Wagner, Cohnheim, Lenhartz, and others had referred to their presence in sputum without knowing their original source. The "myelin droplets" of Virchow, or "crushed nerve-substance" of Lenhartz, are familiar features of this subdivision of pathology.

Briefly, our inquiry seems to us to have shown that the adrenal system is the source of the secretion which, with the oxygen of the air, forms the oxidizing substance of the blood-plasma. It has also revealed, we believe, the origin and mode of distribution of the bodies with which this oxygen directly or indirectly combines: *i.e.*, *peptones*, *myosinogen*, *fibrinogen*, *hæmoglobin*, and *myelin*, to insure the continuation of life and the efficiency of all organic functions. Finally, it has suggested that in addition to these agencies, all leucocytes and, under certain circumstances, the plasma, contain a protective agency, trypsin, which, with Metchnikoff's phagocytic cells, serves to destroy micro-organisms and convert their toxins and other albuminoid poisons into harmless products. Considered jointly, these various factors seem to us to represent the aggregate of vital phenomena.

We have termed "Immunizing Medication" the use of remedies to arrest diseases during their incipency by stimulating the functional activity of the adrenal system. Indeed, in the light of our views, it becomes evident that during epidemics, after injuries received in places thought to contain tetanus saprophytes, after bites of presumably rabid animals or venomous animals, or after infections

of any sort, we can cause in our blood-stream a sufficient accumulation of phagocytes, trypsin, fibrinogen, and oxidizing substance to offset the lethal tendency of these pathogenic elements. But it is not only in acute affections that protection can thus be acquired. Inherited vulnerability to tuberculosis, for example, is, in truth, nothing but congenital adrenal insufficiency, a low grade of general nutrition, which it is within our power to correct by the appropriate use of the many remedial agents which science has placed in our hands.

The main cause of death during acute diseases was also studied. Not only were the classical teachings regarding the importance of the blood's alkaline reaction emphasized; but the very fact that the various leucocytes were found to distribute their peptones, myosinogen, fibrinogen, etc., by migrating in every direction, raised the need of an adequate proportion of alkaline salts in the blood-stream to the position of a *sine qua non* as regards the continuation of life, especially in febrile disorders. Indeed, the rapid utilization of alkaline salts, especially sodium chloride, in the organism, and the fact that they are inadequately, if at all, replaced through their normal channel, the digestive tract, during disease, proved to be the predominating cause of death.

The foregoing summary can only be said to include some of the more important processes, physiological and pathological, studied in this volume. A comprehensive study of the nervous system and of the functional processes in the various organs, as modified by the presence of previously unrecognized structures, the formation of glycogen, urea, etc., the protective processes in the intestinal canal and respiratory surfaces, could not be satisfactorily summarized. The same may be said of Addison's disease, acromegalia and chlorosis, the pathogenesis of fever, the identity of the Widal reaction, the so-called gouty diathesis, glycosuria, cancer, the causes of the predilection of children to certain infectious diseases, the action of a large number of remedies upon the adrenal system, etc.

Can we pretend that, owing to the care with which our investigations have been conducted, our deductions are invulnerable? We only formulate this question to answer it negatively. The working methods adopted, however, do not seem to us to have rendered any serious deviation from the straight path possible. All theories, even those advanced by all the greatest authorities of the nineteenth century, were totally ignored. Our purpose being to treat each question as if it had been a mathematical problem, positive data were alone used as factors. Preconceived conclusions were under no circumstance allowed to prevail, and the solutions were only formulated after each question had first been submitted to analysis, then to a reconstructive, or synthetic, process.

We fully realize, however, that our factors were necessarily drawn from a mere fraction of existing literature,—though a vast amount of the latter had to be scrutinized,—and that the balance of recorded data and future work of the

galaxy of brilliant workers which our profession contains in all lands may eventually completely transform our views. Again, we do not lose sight of the fact that our short-comings may have caused us to present distorted images simply through our limited knowledge of several of the branches of science—physiological chemistry, for instance—to which we have had recourse for light. Yet, if our aim is properly interpreted, it will become apparent that we have encompassed the whole field of medical science in our labors, in the hope that a broad horizon would enable us to discover its weaker parts.

We found, we may say, that the back-bone of Medicine was the absent factor, and that if the patient labors of so many great minds had not proven as useful in the development of practical medicine as they should, it was because they lacked such a fundamental frame-work to afford a fixed *nidus* for each discovery, wherein its true relation to other discoveries would at once become evident.

What details we have introduced, therefore, only had for their purpose to show that the newer organic substances described—the oxygen-laden adrenal secretion of the plasma, for example—were inherent parts of the organism as a whole. What we have said of the physiological chemistry of glycogen, myosinogen, urea, and many other bodies, may not stand the scrutiny of an Ehrlich, a Gautier, an Abel, a Chittenden, a Vaughan; but the fact that such men are available to promptly correct what errors we might have made gave us the confidence to proceed with our work without undue anxiety. We did our utmost, with what limited knowledge we possessed of these various auxiliary branches of medicine, to clearly set forth our views, and will accept with gratitude any warranted correction which our fellow-workers may deem necessary.

That our conception of the functions of the ductless glands is well grounded seems probable. Had it been otherwise, the existing concordance between the various parts of the work could not have been obtained; nor would solidly established data have fallen normally into line without requiring hypothetical functions to establish their usefulness in the elucidation of the many questions which our investigation awakened. If we are not mistaken, this affords in itself the kind of evidence which betokens sound premises.

We may also venture the opinion that, if our views are based on a firm foundation, our labors have served to illustrate the dangers of promiscuous self-medication indulged in by the general public. Indeed, we will have occasion to show, in the second volume, that vulnerability to disease may not only be thus acquired, but that the adrenal system, debilitated through injudicious stimulation, is unable to protect the system when disease is initiated.

In addition to periodical literature, a large number of books were consulted. Among these, however, two have been quoted very frequently in this volume, namely: Prof. Michael Foster's "Physiology" and Prof. Horatio C. Wood's "Ther-

apeutics," two masterpieces of their kind. Experimental therapeutics, with which Professor Wood's name is so intimately associated, afforded information which not only proved invaluable in the course of our inquiries, but without which several of the more important conclusions submitted could hardly have been reached. Indeed, while foreign countries, especially France, Germany, Great Britain, Italy, and Russia, have contributed the greater part of the evidence which has formed the ground-work of our deductions, much of the best and soundest work quoted, we are pleased to state, originated in our own country.

Special pharmacodynamics and physiological pathology, both subdivisions of Applied Therapeutics (a department of Medicine to which we expect to devote our special attention, henceforth, both in our practice and in research work), will be considered in the second volume, which will appear a few months after the present one. The latter will also contain an Analytical Index, in which the modifications in prevailing doctrines that our labors may have suggested will be systematically arranged.

NOTICE TO OUR READERS.

Our RETROSPECT OF CURRENT LITERATURE will, hereafter, in keeping with its purpose, include abstracts of papers that our exchanges may publish upon the newer views submitted in the foregoing announcement. In addition, however, we will introduce, under the caption of "*Commentaries*," what remarks the more important articles quoted may call forth, any major question being treated at length, if need be. The marked influence of Dr. Koch's recently published views upon the propagation of tuberculosis, for instance, pointed to this question as a leader for this month's issue, in addition to the shorter commentaries introduced under other excerpts. This plan will make it possible to bring out new features of a practical kind that the investigations just outlined may have furnished or that future work may suggest. To illustrate these features, we may state that this number contains:—

1. BOVINE TUBERCULOSIS AND ITS TRANSFERENCE TO MAN.

Review of Dr. Koch's recently published article and of the conclusions reached by the American Public Health Association.

Commentary.—Suggests that Dr. Koch's conclusions are not based on sound physiological premises, irrespective of the newer views herein submitted, and that the latter further emphasize this conclusion.

2. HEROIN AND THE RESULTS OF ITS ABUSE AS A DRUG.

Commentary.—The craving in drug or alcohol habit is ascribed to the tendency of the adrenal system to lapse into insufficiency. Indications as to general measures suggested by this interpretation.

3. INFLUENZA AND THE NERVOUS SYSTEM; GRIPPE PNEUMONIA.

Commentary.—Evidence attesting to the involvement of the posterior pituitary body in this disease. Preventive medication.

Grippal pneumonia as viewed from the newer standpoint. The curative value of hypodermoclysis. The importance of resorting to this measure from the start.

4. PLAGUE INOCULATIONS AND TETANUS.

Commentary.—Evidence to the effect that tetanus is not caused by toxins, but by toxic waste-products. Baccelli's carbolic-acid treatment. Why morphine can be used simultaneously.

BOVINE TUBERCULOSIS AND ITS TRANSFERENCE TO MAN.

IN an article published in the British Medical Journal of December 20, 1902, Dr. Koch gives his views as expressed before the International Conference on Tuberculosis in Berlin, on October 25th, last.

Bovine tuberculosis had been said to be specially frequent in England, according to the accounts of Woodhead, Still, and Shennan. But English returns were not wanting according to which primary intestinal tuberculosis in that country was said to occur less frequently (according to Carr, only 5 times in 53 tuberculous children under 2) or even very seldom. In the United States, out of 369 children in New York, 5 (1.4 per cent.) were found with primary intestinal tuberculosis, according to Bovaird. In Boston, on the contrary, according to Councilman, there were 37.1 per cent. In Germany primary intestinal tuberculosis was of a very rare occurrence. The only exception being at Kiel, where Heller had found 37.8 per cent. of primary intestinal tuberculosis at necropsies of tuberculous children.

These striking contradictions did not appear, according to Dr. Koch, to depend upon local differences, but upon the uncertainty of subjective opinion as to what is understood by primary intestinal tuberculosis.

Less full of contradictions were the assertions concerning observations of skin infection in veterinary surgeons, butchers, and slaughter-house employees related by the chairman. Dr. Koch had himself had many opportunities of examining such cases. All of these had this in common: that, after a wound on the hands or arms obtained while cutting up an animal affected with bovine tuberculosis, wart-like formations, the so-called tuberculosis verrucosa cutis, developed. If the wound extended to a tendon it could in rare cases become a tuberculous inflammation of the tendon-sheath. In isolated cases the process seemed to have attacked the nearest lymphatic glands as well, but to a very slight extent. In the remaining cases the disease remained localized, did not lead to a tuberculosis of internal organs, and ran its course as an insignificant skin malady which often got well of itself. Only in one case had it ever been held to lead to a general infection, viz.: the case recorded by Pfeiffer of a veterinary surgeon in whom tuberculosis of the lungs had developed fifteen months after a wound of the finger, leading to death in the following eighteen months. At the necropsy, however, the axillary glands had been found free from tuberculosis. Dr. Koch concludes from this that no connection existed between the wound of the finger and the tuberculous infiltration of the lungs. The question was only, he thought, one of a "casual coincidence *between* the bovine with tuberculous infection—if it

existed at all." Even this he does not consider as demonstrated. Bearing in mind the extraordinary frequency of primary tuberculosis of the lungs, a coincidence such as this with tuberculosis verrucosa cutis must, he asserts, occur incidentally now and then.

Dr. Koch refers to a new case of the same kind which almost insinuated itself into the literature of the subject a short time ago. A veterinary surgeon in Berlin was said to have injured his index finger at the necropsy of a cow infected with bovine tuberculosis; to have become phthisical in consequence of this, and to have died of hæmoptysis. Inquiries instituted at once elicited that the man in question came of a tuberculous family, and before wounding his finger showed undoubted signs of tuberculosis of the lungs. Other cases are referred to affording equally misleading information.

The author contends that even the occurrence of a bovine tuberculosis infection, which remains local, as a result of a skin wound, does not in any way prove that the bacilli are also in a position to infect the uninjured intestinal mucous membrane, or, if they are able to pass through it without leaving any traces behind, that they render the mesenteric glands tuberculous, and from thence bring about a general infection of the body, with its well-known and justly feared consequences. He refers, however, to the fact that there are several other infectious diseases which are conveyed to man by feeding on meat and milk: *i.e.*, the so-called cases of meat poisoning which have been largely caused by a typhoid-like bacillus, and also to illness resulting from the use of the flesh of animals which had suffered from splenic fever. Milk, too, may contain typhoid bacilli, as has been so frequently observed in recent times, and these give rise to an outbreak of enteric fever.

On the other hand, Dr. Koch states that, according to Bollinger, a collective investigation instituted by the order of the Bavarian Government yielded a number of isolated observations which speak for the harmlessness of the flesh of tuberculous animals. Many families, even whole villages, were found which consumed tuberculous meat as a matter of course without tuberculosis occurring more frequently among them than elsewhere. Göring and Schottelius had had quite similar experiences.

From this and other facts Professor Koch considers that proof of the danger of meat infected with bovine tuberculosis is completely wanting. He also reiterates that not one single observation free from objection can be cited of the injurious influence of milk infected with bovine tuberculosis any more than for the harmfulness of meat affected in the same way, though numerous people continually expose themselves to the supposed danger.

Finally, he repeats what he said in his London address: "The fight with tuberculosis must not be fought on wrong lines if it is to have a real result. It must aim at shutting off the chief source of infection. This is those consumptives who in consequence of the unfavorable conditions under which they live, or because they obstinately set aside the simplest rules for the prevention of infection, are a danger to their companions. In some way or other we must look after these sick people, either by procuring for them more favorable conditions, for example,

as regards dwelling-places, or by so sheltering them in suitable institutions that they cease to be a danger to their neighbors."

At the Thirtieth Annual Meeting of the American Public Health Association, held at New Orleans, La., December 8, 9, 10, 11, and 12, 1902 (Boston Medical and Surgical Journal, Jan. 1, 1903), M. P. Ravenel first reviewed the researches with regard to the communicability of human tuberculosis to animals. He then discussed at length investigations as to the transmission of bovine tuberculosis to man, mentioning the experimental work recently done in this line.

The results of these investigations are summarized in the following conclusions: 1. While the bacilli of human tuberculosis were found of feeble virulence for cattle, there was a considerable proportion of cases in which these bacilli were virulent for cattle as well as other animals. 2. Bacilli of both the bovine and human type had been obtained from cases of human tuberculosis. 3. Bovine bacilli introduced into the human tissues by accidental inoculation, if left, multiplied and produced disease at the point of inoculation, and even recovered after a considerable time with their vitality and virulence unimpaired. 4. Various statistical studies indicated that a considerable proportion of cases of human tuberculosis, and particularly with children, originated from the ingestion of the bacilli with contaminated food.

The committee of the American Public Health Association decided, therefore, that the conclusions of Dr. Koch, announced at the British Congress of Tuberculosis, to the effect that bovine and human tuberculosis were different, that human tuberculosis could not be conveyed to cattle, and that man was insusceptible to bovine tuberculosis, were disproved, and should no longer have weight with sanitarians. The evidence adduced indicated that greater care should be exercised to prevent infection with bovine tuberculosis, and particularly to guard children from tuberculous milk.

Commentary.—The position taken by Dr. Koch is unfortunately fraught with great danger to public welfare, notwithstanding the excellent motive which underlies it: *i.e.*, the desire to centralize all prophylactic measures where this distinguished bacteriologist thinks they will prove most prolific of good. Any criticism of his views, therefore, cannot but bear upon the scientific value of his deductions, or, rather, upon that of the class of material upon which these are based. Indeed, it seems to us that he would have been led to precisely opposite views had his researches covered a broader field.

Dr. Koch, for instance, ascribes the striking contradictions which he enumerates to the "uncertainty of the subjective opinion as to what is understood by intestinal tuberculosis." That all cases in which tuberculous infection occurs may not furnish evidence of intestinal tuberculosis is evident. May not the germs enter the circulation and form foci elsewhere in the organism? Indeed, apart from any of our own views, there is ample evidence in literature to show that such may be the case. Macallum (Journal of Physiology, vol. xvi, 1894), Kunkel (Archiv für die Gesamte Physiologie, lxi), Quinke (Archiv für exper. Pathologie, Bd. xxxvii,

1896), Hall (Archiv für Anatomie und Physiologie, 1896), Hare (Archiv für Verdauungskrank., vol., 1898), among others, have traced iron in the blood of various organs after feeding animals upon iron-containing substances. Macallum, for instance, observed, in sections of intestines taken from animals first starved, then fed upon a substance containing albuminate of iron, free leucocytes crowded with albuminate-of-iron pigments in the intestine, some appearing to pass out through the epithelial cells, while others advanced into the subepithelial elements. He also found them in the venules of the villi, the capillaries of the liver, the spleen, etc. These and other data available in current literature suggest that tubercle bacilli can easily penetrate into the general circulation from the intestinal canal.

Metchnikoff's doctrine of phagocytosis, as far as the ability of the polymorphonuclear neutrophiles to ingest bacteria is concerned, is now accepted as a fixture of science. That these cells may serve to carry bacilli into the organism under certain circumstances is quite within the domain of possibility. Are these the cells which enter the intestinal cavity and after ingesting proteids—bacilli, if any are present—re-enter the villi? That they are is readily shown by the fact that Metchnikoff recognizes these particular leucocytes and their immature prototypes, the mononuclears, as the only varieties among the mobile leucocytes that are phagocytic. As these cells represent at least three-fourths of the blood's white corpuscles, the possibility of infection from the intestinal canal, without in the least necessitating local lesions in the latter, is evident.

In the light of these facts it seems clear that the statistics of intestinal tuberculosis can only prove misleading when conclusions are to be formulated. They must perforce have misled Dr. Koch when he made the broad assertion that "not one single observation free from objection can be cited of the injurious influence of milk infected with bovine tuberculosis any more than for the harmfulness of meat affected in the same way."

Still, Dr. Koch refers, we have seen, to "numerous people" who "continually expose themselves to the supposed danger" and to "many families, even whole villages," which were found to consume tuberculous meat "without tuberculosis occurring more frequently among them than elsewhere." The immunity to infection with which many subjects are endowed is graphically illustrated here; conversely, the usual mortality prevails even under conditions of unusual exposure. How account for this?

This introduces the key-note of the whole question: *i.e.*, the *individual vulnerability*, the so-called "vital resistance" of the exposed subject. On page 5 of this journal we wrote: "In general diseases, what has been termed the patient's 'vitality,' or 'vital resistance,' thus became ascribable to fluctuations in the anterior pituitary body's functional efficiency: In other words, overactivity of this organ,

by correspondingly enhancing the production of the adrenal secretion was found to increase metabolism and the activity of all functions in proportion, while lowered activity of this organ, by inhibiting the production of adrenal secretion and thus reducing the quantity of oxygen distributed throughout the organism, proportionately lowered the activity of all vital processes." The relation between this physiological process and individual vulnerability to infection soon becomes evident when we realize that among the organs kept up to their normal standard of activity by a fully active adrenal system are the spleen and the pancreas.

Indeed, in the light of our researches, vulnerability to tuberculosis is primarily due to a *deficiency of trypsin*, both in the intestinal canal and in the portal system, where it appears as an internal secretion. Since the digestive process within the phagocytic cells through which destruction of bacteria occurs is due to the action of trypsin (as shown by Metchnikoff), it is plain that a deficient supply of this proteolytic internal secretion weakens the efficiency of this process. This means that the efficiency of the protection it affords the general system is likewise reduced. Conversely, the presence of a normal supply means adequate ability on the part of the system to kill the germs, whether derived from the intestinal tract, the pulmonary alveoli, or introduced into the cutaneous tissues, as occurs frequently in butchers. When the normal proportion of trypsin is not available, however, the bactericidal digestive process is obviously inhibited, and *undigested tubercle bacilli are pathogenic bacilli*. If we now recall the itinerary of these leucocytes after they penetrate the intestinal villi with their burden of proteids,—or tubercle bacilli,—it will become evident that *direct infection of the lungs can occur through the intermediary of tubercle bacilli ingested by leucocytes in the intestinal canal*. Indeed, the path of these cells: villi, portal system, heart, and pulmonary tissues (if our own views are sound), is practically direct.

Our investigations fully sustain the decision of the American Public Health Association, therefore. In fact, we have been led by them to consider contaminated milk and foods as the main sources of infection when the adrenal system's functional activity is reduced. While the value of the precautions recommended by Dr. Koch to prevent infection by the *respiratory* tract can hardly be sufficiently emphasized, those having in view the prevention of contamination through the *digestive* canal should—in the light of our views at least—be more stringently carried out than ever before.

C. E. DE M. S.

Cyclopædia of Current literature.

BRIGHT'S DISEASE, OCULAR MANIFESTATIONS OF CHRONIC.

The ocular lesions which may be associated with chronic nephritis are: Complete blindness, without ophthalmoscopic lesion. This occurs most often in acute nephritis, but also in acute exacerbations of chronic nephritis. Albuminuric retinitis and neuro-retinitis. Alterations in the caliber and relation of the retinal vessels, owing to sclerotic changes in their walls, with or without hæmorrhages and exudates in the retina, seen in association with those forms of renal disease in which vascular changes are evident elsewhere in the body; also isolated hæmorrhages and exudates without marked vessel-wall changes. Alterations in the uveal tract, particularly in the choroid and iris. The choroidal lesions are not evident to the ophthalmoscope, but can be seen only on microscopical examination. Some varieties of cataract. A causal relation between nephritis and cataract has, however, never been established. Paresis and paralysis of the ocular muscles, particularly the superior oblique and the external rectus. They are rare and may be terminal symptoms of albuminuria. Recurring subconjunctival hæmorrhages. This manifestation has not received the attention it deserves among the ocular signs of nephritis. The hæmorrhages occur in persons past forty, and usually during sleep, the patients being surprised on waking to find an extravasation into the conjunctiva. An exactly analogous condition may appear in the delicate skin of the lower lid. G. E. de Schweinitz (Proceedings of the Philadelphia County Medical Society, Nov., 1902).

CORYZA, ACUTE, TREATMENT OF.

Few minor ailments are as annoying as an acute coryza, and in few diseases is the treatment as unsatisfactory.

Sternberg has recently called attention to a simple procedure, which was recommended by Williams in the middle of the last century. His plan was to "dry it up." Williams found, and Sternberg echoes his opinion, after an experience of years, that if liquids are totally excluded from the diet for twenty-four hours the congestion in the head, nose, and conjunctivæ and the irritating discharge from the nose are greatly lessened. If the treatment is continued for the second day, the coryza will usually be brought to an end except for an occasional discharge of gelatinous, opaque mucus, which is apt to appear toward the close of such a catarrh. Of still more importance is the fact that the coryza is not followed by a cough, and that the treatment is a prophylactic against otitis media, or the extension of the inflammation into the adjacent nasal cavities.

To be successful, the treatment must be started at once. Fever is not a contra-indication, but chronic nephritis is. The total abstinence from liquids is not absolutely necessary, but one should indulge in but a few teaspoonfuls at a meal. Editorial (Boston Medical and Surgical Journal, Dec. 18, 1902).

CREOSOTE, TRUE AND FALSE PREPARATIONS.

In the Bulletin of Pharmacy for December appears an interesting editorial on the above subject. It is shown that much of the commercial article sold as "creosote" is not the creosote intended

by the pharmacopœia, made from beechwood, but is, instead, liquefied carbolic acid made from coal-tar—a distinctly poisonous article not to be administered for the purpose for which true creosote is indicated. In prescribing this drug physicians should be careful to specify the official article, unless he is satisfied that the prescription will be filled by a pharmacist who submits all of the drugs he dispenses to pharmacopœial tests. (Pennsylvania Medical Journal, Dec., 1902.)

DIABETES MELLITUS.

Glycosuria may be due to (1) an imperfect assimilation of carbohydrate into fat and proteid in the intestinal villi, as a consequence of which it passes over into the portal circulation in larger quantity than can be converted into glycogen by the liver; (2) a glycosuria due to the overproduction of glucose out of hepatic glycogen; (3) a glycosuria due to the fact that through vasomotor influence the glucose passes through the liver too rapidly to permit its conversion into glycogen; (4) a glycosuria due to defective oxidation of glucose. For such deficient oxidation the pancreas may be responsible either by disease or by interference exerted by deranged suprarenal function. J. Tyson (University of Pennsylvania Medical Bulletin, Aug. and Sept., 1902).

DIPHTHERIA ANTITOXIN, THE NON-SPECIFIC VIRTUES OF.

Observations are accumulating to prove that diphtheria antitoxin possesses curative properties for diseases other than diphtheria. Thus, Schapiro (Prakticheski Vrach, No. 5, 1902) reported a case of traumatic erysipelas, the patient having been successfully treated with diphtheria antitoxin. Tsvietaieff (*ibid.*, No. 22) reported two

cases of erysipelas in persons who were cured by the same method, and Alexeieff also reports success achieved in two cases of erysipelas treated with antitoxin. Such observations do not quite fit our notions of the specific nature of antitoxins, and, while we are willing to admit that antitoxins, like many other substances, may stimulate phagocytosis to a degree sufficient to exert a beneficial influence on the course of the disease, we cannot see how antitoxins could be specific and yet neutralize indiscriminately any other toxins. Our entire list of specific antitoxins would have to be abolished were this the case, since a single antitoxin would serve as a cure-all. While these clinical observations are not sufficiently numerous or weighty to overthrow our conceptions of the nature of immunity, nevertheless they form a disturbing element and should be explained. It would seem that a satisfactory explanation could be found in assuming that, aside from the specific properties, antitoxins contain substances peculiar to the serum itself, and that such substances may in certain cases make a favorable impression on the course of the disease. Such an explanation is hinted at by Tsvietaieff, who thinks that diphtheria antitoxin acts beneficially in erysipelas on account of the increased alkalinity of the blood which it brings about. He obtained very good results in the treatment of phlegmons by alkaline compresses, and believes that the effect is similar in both cases. Editorial (Philadelphia Medical Journal, Dec. 13, 1902).

DIPHTHERIA, INTRAVENOUS ADMINISTRATION OF ANTIDIPHTHERITIC SERUM IN.

The evidence in favor of the treatment of diphtheria by antidiphtheritic

serum is rapidly accumulating. The value of the serum cannot now be denied, and many observers could be found who would consider it to be practically a criminal act to withhold it in actual practice. It has been clearly shown that the results are better when the serum has been injected in the early stage of the disease; in fact, it has been recommended that the serum should be administered in all cases of doubtful throat disease, since, if all due antiseptic precautions be adopted, its use is harmless even when very large doses are given. Many cases of diphtheria, however, do not come under notice until the disease has reached such a stage as to render all forms of treatment almost hopeless.

Dr. D. Louis Cairns advocates the intravenous administration of the serum instead of the usual subcutaneous method. His results are certainly most striking, although, as he himself admits, the number of cases dealt with is small. He advocates the employment of intravenous injection in the malignant forms of the disease: *i.e.*, those characterized by hæmorrhage from the nose or into the skin, by great glandular enlargement with marked cellular infiltration, and by extreme blanching of the skin; also in those cases in which the lungs are markedly involved or in those instances in which the patient is moribund before coming under observation; and finally when the patient is in a profoundly toxæmic condition. These are precisely the cases in which the serum has not yielded satisfactory results. Dr. Cairns's method, therefore, is worthy of further trial. The cases which he records tend to show that the technique is not attended with any great difficulty, while the results are most satisfactory. Editorial (Lancet, Dec. 20, 1902).

EYE, TOXINS IN INFLAMMATIONS OF THE.

Bacterial toxins, so far as tested, when instilled even for many hours into the healthy conjunctival sac were found incapable of producing inflammation or causing other injury. The same toxins when injected into the tissue of the conjunctiva or into the anterior chamber invariably set up local inflammation, the extent and intensity of the inflammation varying to some degree, according to the species of bacterium yielding the toxin. Bacteria which had not previously been proven to produce soluble toxins were found to produce them even in young cultures, and it is suggested that injections of bacterial filtrates into the eye, particularly into the conjunctival tissue, constitute a more delicate biological test for the detection of certain toxins than the tests usually employed for this purpose. The experiments recorded in this paper furnish additional examples, in a comparatively new field, of the importance of toxins in explaining the pathogenic action of bacteria, and likewise emphasize the etiological significance of injuries of the covering membrane of the eye in favoring the action of toxins and bacteria. Randolph (American Journal of the Medical Sciences, Nov., 1902).

HEADACHE POWDERS.

The use of these drugs seems to have become a prominent feature of American life. Nearly every druggist has a formula either based on some physician's prescription or collated from current literature. The preparations are dispensed without hesitation or knowledge of the cause of the headache, and without regard to possible idiosyncrasy to the powerful drugs used. Information obtained in a recent inquiry and

analytical examination of these powders give the following data, which show that, while many different formulæ are used, the powerful acetanilid is the most common. Antipyrin and phenacetin are but little used. The sole reason for the employment of acetanilid is its cheapness. Antipyrin costs about 35 cents per ounce, phenacetin somewhat more, while acetanilid costs only 28 cents per pound.

The following are some of the formulæ:—

1. Phenacetin, 5 grains; caffeine, 1 grain.

2. Acetanilid, 3.5 grains; baking soda, 5 grains; caffeine, 0.5 grain; tartaric acid, 0.5 grain.

3. Acetanilid, 2 grains; caffeine citrate and camphor monobromate, of each, 0.5 grain.

No. 1 is sold at a drug-store in the business quarter of the city, and will represent what the banker or broker will be likely to get when the stock-market has a disquieting action on the brain. No. 2 is an attempt to imitate a well-known proprietary "pain-killer." No. 3 is a formula used by manufacturers of the "migraine tablet." Henry Leffmann, Laboratory of the Phila. Med. Jour. (Philadelphia Medical Journal, Dec. 27, 1902).

HEROIN: THE RESULTS OF ITS ABUSE AS A DRUG.

Owing to its success in respiratory affections, heroin has run the risk of being abused by patients, precisely as has been the case with morphine. The author contributes a number of interesting observations on this point. Heroin is the diacetic ether of morphine, and, while less powerful as an hypnotic than morphine, it has a specially sedative effect on the respiratory passages,

and slows and deepens the respirations. Having found it beneficial in asthma, spasmodic cough, bronchitis, etc., patients have become addicted to it when its use was no longer indicated, largely owing to its euphoric effect. Among the several cases, male and female, recorded by the author, the following is typical and of interest. The patient was a woman, aged 46 years, of intelligent character, a sufferer for years from restlessness, insomnia, fleeting bodily pains, and vague distress. After various drugs had been tried without success, heroin was given in July, 1900, with benefit, hypodermically, there being a total cessation of pain and restlessness, while refreshing sleep was secured. To continue this treatment she entered a sanatorium, and underwent nightly injections (6 milligrammes of heroin per dose) hypodermically for two months. Sleep followed fifteen minutes after the dose. She left the sanatorium cured of her ailments, but now became a slave of the drug, which she continued to abuse until it gave rise to toxic symptoms (delirium, with pains and cramps) and produced a state of general nervous agitation. Under medical treatment the heroin was very brusquely discontinued, and for a fortnight afterward she suffered much agony and painful insomnia. She had also been suffering from severe constipation, owing to the abuse of the drug. All these untoward symptoms, however, passed away after withdrawal of the drug, and the patient was at length regarded as cured. J. L. de la Jarrige (Thèse de Paris, 1902; British Medical Journal, Dec. 20, 1902).

[*Commentary.*—In the light of our views, addiction to a drug, alcohol, etc., is due to the need its abuse initiates, that of adrenal stimulation. When the

patient is deprived of it the adrenal system lapses into insufficiency; products of waste accumulate, various functions are inhibited, etc., and the patient suffers intensely unless the stimulation is sustained. But as most drugs will also do this, a morphine, cocaine, or alcohol *habitué* should receive relief from other agents, quinine or iodine, for instance. Gradually reduced, these agents would as steadily diminish the craving and the adrenal system resume its usual functional activity.—S.]

INFANTILE CONVULSIONS.

The writer divides infantile convulsions into two main groups: symptomatic and idiopathic. The latter are divided into three varieties: (1) external convulsions, or eclampsia; (2) internal convulsions, or spasms of the glottis; (3) essential contractions of the extremities, or tetany. The first variety is the most common, and is the one usually described by writers.

The relation of epilepsy and eclampsia has been studied. Coutts reports 85 cases of convulsions in infants, of whom 11 became epileptic and 29 were affected with other neuroses. Dufour reports 15 epileptics among 66 infants who had had convulsions. The writer reports 4 cases of epilepsy among 54 cases of infantile eclampsia. The majority of cases of convulsions in infancy are the expression of a nervous diathesis; they are usually transitory, and clinically very different from epilepsy.

In infantile eclampsia there are no macroscopical alterations of the central nervous system, and microscopical lesions are by no means constant. In the pure types of eclampsia there is no inflammatory involvement of the meninges, though cases are found that are

intermediate between these and those in which there are gross or even suppurative lesions of the meninges. The relation of eclampsia to meningeal involvement has been cleared up by the extensive knowledge of these conditions which has been furnished by lumbar puncture and the examination of the cerebro-spinal fluid.

In the etiology of convulsions in children heredity plays an important part. Coutts, in 100 cases of convulsions in children, found that there was marked family predisposition to the disorder in 67. Alcoholism in parents, hereditary syphilis, and lead poisoning furnish a not infrequent number of cases. The age has an important bearing upon eclampsia, it occurring very largely in the first two years, and having a marked predilection for the first six months after dentition. The influence of dentition is less important than rickets, the affection in the latter being explained by the frequency of a gastro-intestinal intoxication. Convulsions are rare in the newborn in the absence of obstetrical traumatism. Drug poisoning, such as that by carbon dioxide, or the injection of alcohol or opium, may cause them, but by far the larger number are due to autointoxication, uræmia, indigestion, and enteritis. D'Espine (*Archives de Médecine de l'Enfance*, Oct., 1902).

INFLUENZA AND THE NERVOUS SYSTEM.

The writer, in an able paper on this subject, adduces considerable timely evidence to emphasize the relationship between influenza and the nervous system. He refers to the more recently published article of Fehr, von Koenigshoven (*Journal of Mental Science*, July, 1899), in which he is stated to have described a markedly virulent epidemic

which occurred in 1387, which was universal over the entire European area. De Bays also described an epidemic, occurring in 1404, and Fehr mentions the interesting fact that it was then noted that following the disease there was a tendency to mental trouble: hypochondriasis, melancholia, depression, and even suicide.

The London correspondent of the Medical News, April 1, 1899, also observed that during the 1899 epidemic affections of the nervous system seemed to predominate, many cases being scarcely recognizable until the characteristic stage of depression appeared.

It has already been pointed out, writes Jelliffe, that as early as the fourteenth century, its influence in causing psychoses was recognized, and the more recent works of Kellogg, Gowers, and Berkley have only served to accentuate a belief now grown almost universal. Thus, Kellogg observed that "Epidemic influenza (grippe) gives rise to some very serious forms of insanity, lingering and uncertain as to recovery, and this is particularly the case in elderly persons."

Gowers also writes: "There is no acute malady, with the exception of diphtheria, after which disturbance of the nervous system is so frequent as after influenza, and there is certainly no disease that has such varied nervous sequelæ. This effect, though long known, has never been perceived so distinctly as in the severe outbreak of 1890.

"Functional disturbances of the nervous system seem to be the direct effect of the action of the toxins of the bacillus, since they form almost constant features of the acute affection. Some of the more severe sequelæ, moreover, have followed second or third attacks

of influenza, which were mild and sometimes even trifling. On the other hand, there has been a disposition to associate with influenza affections of the nervous system coming on six, nine, or twelve months after the primary disease, without any other connection with this than some impairment of constitutional strength, such as follows every depressing acute illness. Such remote affections cannot be regarded as the specific consequences of influenza. Moreover, many of the direct sequelæ cannot be regarded as quite special, since so often previous disposition to them can be distinctly traced.

"The mental state and physical depression or inertia, seldom absent, rarely cease with the acute attack; this almost universal sequel has become familiar to everyone. It is not surprising that, especially in predisposed individuals, definite melancholia should grow out of it, sometimes of the hypochondriacal type, sometimes with definite delusions, and occasionally with suicidal impulses."

Jelliffe also quotes the more recent statements of Berkley: "Following the epidemic of grippe in 1891-92, and the more recent one of 1898-99, a variety of nervous disturbances was quite prevalent, mainly in persons of latent or pronounced psychopathic disposition. The majority of the forms assumed have been those of a general neurasthenia of a severer or milder type, but there has also been quite an array of the true psychoses. The toxins of influenza seem to fall with especial stress upon the central nervous system, and, besides, have a most definite depleting effect upon the general physical powers, both of which influences act with greater force upon the hereditarily unstable than upon the sound individual. At the

autopsies of patients dying from the influenza poison the central nervous system is always found much congested (Geill).

"The most frequent form of psychoses following influenza is the acute confusion, at a later stage assuming the clinical picture of a hallucinatory, agitated melancholia. Mixed hypochondriacal and neurasthenic forms are also noted. The duration is comparatively short, from two to six weeks, and the eventual outcome is favorable, unless the predisposition to insanity is great.

"Stuporous states occur with less frequency than the above form, but are of longer duration, running their course, as a rule, in from eight to ten weeks. All the instances under my personal observation have been fully restored to sanity. The majority of cases is found between the twentieth and fiftieth years, very few in childhood or old age."

With this statement Jelliffe's own experience coincides. In an analysis of some fifty patients seen by him in the last five years suffering from influenzal psychoses, mental stupor or confusion had been a prominent symptom in over 20 per cent. The affinities with neurasthenia were evident.

Wildermuth, in his work, also observes, says the author, that the great epidemic of 1898-99 was followed by a long-continued state of nervous depression in many persons in Germany. For prognosis he observes that, of 52 personal patients, there were 26 recoveries, 17 remained insane, and 9 died.

Regarding the influence of influenza and its psychoses, especially suicidal mania, Jelliffe states that in 1901 there were recorded 7245 suicide deaths in the United States. In 1899 there were 5340 such deaths: an increase of 35.6 per cent.

Causes assigned (1901) were as follows:—

CAUSE.	NO.	PERCENTAGE.
Despondency	2980	41.1
Insanity	647	9.3
Ill health	618	8.5
Domestic infelicity	541	7.4
Liquor	439	6.0
Disappointed love	283	3.9
Business losses	67	0.9
Unassigned causes	1643	22.6

Of the total 7245, there were 5850 males and 1395 females: a proportion of nearly 80 per cent. males. Physicians head the list among professional men, the record standing: Physicians, 33 per cent.; attorneys, 10 per cent.; clergymen, 10 per cent.; bankers, 6 per cent.; journalists, 6 per cent.; college professors, 1 per cent.

The author also introduces the following quotations from the Medical Record (editorial, March 1, 1902): "The statistics given above, as to causes, are but roughly drawn up; if close analyses were made as to motives, the results would be highly instructive from a psychological standpoint. The steady increase of the suicide habit is undoubtedly due, to some extent, to the ease with which poison may be procured." But what causes one to want to procure poison? Is poison any more readily procurable now than a dozen years ago?

The Weekly Bulletin (March 1, 1902) of the Health Department of Chicago states: "Against the conditions which have produced these results (an enormous increase of mortality from pneumonia, the chronic diseases, suicide, and other forms of violent death—53 per cent. more of these latter than a year ago) sanitary effort and administration can do little. Influenza, which has been prevalent, frequently in epidemic form,

in all parts of the world during the last dozen years or so, not only disastrously complicates other diseases, but exerts especially a more baneful effect upon the nervous system, causing all forms of mental disturbances, from mere irritability of temper to suicidal melancholia and homicidal mania. The mental equilibrium, not only of individuals, but of nations, has been profoundly affected by this malignant malady during the last decade. The investigations of the coroner's office show that a large proportion of the greatly increased number of suicides in Chicago during this period had previously suffered from the grippe. The Department has labored for years to secure proper attention to the importance of the disease, but it is still too often treated indifferently, a trifling ailment that may be 'fought off.'"

The Medical Record (June 22, 1901) gives the deaths by suicide per 100,000 of population between 1871 and 1900 in five American cities. During the 20 years, 1871-90, the rate increased from 14.1 per cent. to 16.4 per cent. in New York, or 16.3 per cent.; but in the ten influenza years, 1891-1900, the rate was 21.5—an increase of 52.4 per cent. over the previous twenty years' rate. Similarly as to Chicago: the rate increased from 12.6 per cent., in the first 20 years, to 23.3 per cent. in the influenza decade.

Jelliffe calls special attention to the fact that, while the total increase between the suicide-rate of the first lustrum, 1871-75, and the last, 1896-1900, was 66.6 per cent. in New York and 82.5 per cent. in Chicago, the increase between the first and the fourth lustrums (twenty years) was only 16.3 per cent. in New York and 29.3 per cent. in Chicago, but was nearly fifty (49.4) per cent. in New York and more than forty-

one (41.4) per cent. in Chicago in the ten influenza years, 1891-1900.

As to the prevention of influenza, the author states that although its mortality and its collateral affections, fortunately, fall short of that recorded in the great epidemic, the situation is not free from anxiety. It is probable that, even now, many people fail to realize the fact that influenza is a highly contagious disorder and one of the most virulent of the acute specific diseases. When cholera breaks out in a community every possible precaution is taken to prevent its spread, but in the case of influenza little or nothing is done, and the patient is often unwilling to sacrifice his social engagements. It is the reckless exposure of the infected which makes the disease so difficult to eradicate. Everyone is exposed, more or less, to the danger of being invaded by the bacillus, and it is difficult to devise prophylactic measures on which absolute reliance can be placed. Much, however, may be done by attention to a few simple rules.

When a person is ill with influenza, it is better not to visit him or, if a visit is imperative, it is advisable to avoid unnecessary personal contact. After the interview the hands should be thoroughly washed in an antiseptic solution and the outer garments should be aired by being exposed to a current of fresh air or, better still, to the direct rays of the sun. The condition of the general health of those exposed to infection should be maintained by plenty of outdoor exercise, by good food, and the avoidance of indulgence in alcohol. At the onset of the initial symptoms the patient should remain in bed and should at once obtain medical advice. No reliance should be placed on popular remedies, for the complications are so grave that the best possible treatment is re-

quired. All articles, such as sheets and pocket-handkerchiefs, which have been used in the sick-room, should be put into a vessel containing an efficient disinfectant. That recommended by many sanitarians is made by mixing $\frac{1}{2}$ ounce of corrosive sublimate, 1 fluidounce of hydrochloric acid, and 5 grammes of commercial aniline blue in 3 gallons (a bucketful) of water. It is, of course, poisonous and a good disinfectant; besides, it is cheap. Articles, after being allowed to stand for some time in this mixture, should be rinsed in clear water for three or four hours before being sent to the wash. Clothing may be disinfected in a suitable disinfecting apparatus by heat, and local sanitary authorities should be urged to give notice of their willingness to undertake this duty. After the patient has vacated his room, the furniture should be removed and cleansed and the room disinfected, preferably with formalin. The author closes with the remark that, while these may seem unnecessary precautions, the disease is so infectious, and its consequences so far-reaching, that it is wise to treat its risk seriously. S. E. Jelliffe (Philadelphia Medical Journal, Dec. 27, 1902).

[*Commentary.*—Our work has suggested that, while the anterior pituitary body was involved in the morbid process, the brunt of the disease was borne by the posterior pituitary body: *i.e.*, the general center of the nervous system. Dr. Jelliffe's paper, therefore, contributes strikingly suggestive evidence attesting to the correctness of our interpretation. His appreciation of the seriousness and contagiousness of influenza is fully sustained by our researches. Few diseases leave in their wake such pernicious consequences, owing to the

simultaneous involvement of the two chief centers of the organism. The following prophylactic is recommended:—

R Quinine hydrochlorate, gr. ij.
Strychnine sulphate, gr. $\frac{1}{60}$.

To be taken during each meal.

In *grippal pneumonia* hypodermoclysis in the light of our views becomes the most efficient of all measures indicated. This opinion is sustained by clinical experience. Dr. Frederick P. Henry, of Philadelphia, who was the first clinician to resort to this measure (1889), says, in Hare's "System of Practical Therapeutics" (first edition, vol. ii, p. 290, 1892): "The surest method of conveying water to the tissues is by subcutaneous injections of (deci-) normal saline solution: a solution of common salt of the strength of 50 grains to a pint. About three years ago a number of cases of pneumonia at the Philadelphia Hospital were treated by the writer in this manner and with excellent results, both as regards palliation and cure." (Editorial, Medical News, July 6, 1901.)

This method was also used by him in the worst types of lobar pneumonia met with: *i.e.*, those that occur in drunkards, alcoholic intoxication, exposure, and a debilitated adrenal system incident upon the alcohol habit, concurring to place the patient on the brink of death almost from the start. After vividly describing a case of this kind, he remarks: "Such cases treated by ordinary methods terminate, as a rule, with few exceptions, in death. Such cases treated by hypodermoclysis terminate, as a rule, in recovery." In the light of our investigations, chlorides are utilized in excess from the start as a result of the hyperleucocytosis, and mainly

by the cells themselves. To emphasize the need of the *immediate* use of this measure, *i.e.*, as soon as the diagnosis is established, is hardly necessary.

During the stage of depression strychnine has served us far better than alcohol. Indeed, "the injection of strychnine," using Prof. Horatio C. Wood's words ("Therapeutics," eleventh edition, page 214), produces "in the dog an extraordinary increase in the respiratory air-movement." To us this means an extraordinary formation of oxidizing substance and the rapid destruction of toxic *detritus*, the aftermath of the dread disease in question.—S.]

INFLUENZA, BACTERIOLOGY OF.

Infection with influenza bacilli is prevalent apart from an epidemic of influenza. Influenza bacilli have been found in the sputa of fifty of one hundred unselected cases with cough. In about one-half of these fifty cases the influenza bacilli were in practically pure culture. There is nothing distinctive in the clinical manifestations of influenza apart from epidemics, and the diagnosis can with certainty be made only by the examination of the sputum for influenza bacilli. The duration of the cough and expectoration after an attack of acute influenza does not usually exceed six weeks, but in some cases the duration is for months or years. Many of the cases formerly classed as chronic bronchitis are chronic influenza. Cases of chronic influenza with paroxysmal dyspnea may closely resemble asthma. Chronic influenza is not infrequently mistaken for pulmonary tuberculosis. F. T. Lord (Boston Medical and Surgical Journal, Dec. 18, 1902).

LORENZ OPERATIVE PROCEDURES.

Dr. Lorenz's recent visit has brought out many new and important points in fixation and after-treatment. The steps of the operation are as follows:—

1. With the patient lying on the back, the leg and thigh of the affected limb are flexed each to 90 degrees; the thigh is worked up and down in a line perpendicular to the table. This breaks up adhesions round the head of the femur in its unnatural position. During this and the subsequent steps the pelvis is held firmly by the assistant.

2. With leg and thigh extended, the whole limb is abducted in a plane parallel to the table and worked back and forth to tear the inferior adhesions of the joint-capsule and to some degree to stretch the adductor muscles.

3. With leg flexed and thigh about 45 degrees from the table, the thigh is repeatedly abducted with great force, each excursion bringing the thigh outward nearer the table, stretching and tearing the adductor group, while at the same time vigorous blows and kneading of the adductor muscles near their origins on the ischium and symphysis serve further to tear their fibers.

4. With leg extended, the whole limb is forcibly and repeatedly flexed on the trunk, the foot approximates the face—this to break up and stretch adhesions and fibers in the posterior pelvi-femoral group.

5. With the patient lying on the unaffected side, the thigh is forcibly hyperextended to stretch anterior adhesions and muscles.

6. With the patient again on the back, the leg and thigh are flexed and the thigh is strongly rotated again and again.

7. With a wedge-shaped block under the great trochanter as a fulcrum, the

flexed thigh is abducted with great force, this serving to break the last adductive fibers and to thoroughly release the head of the bone.

8. Acute flexion and outward rotation of the thigh should cause reduction of the dislocation with a distinct sound as the bone slips into place.

9. With the bone held in place, strong abduction now shows the adductor group to be again shortened, and they must be stretched still farther till they no longer have resiliency enough to tend to throw the head of the femur out of the acetabulum.

10. With the bone still in place, any contractures of the hamstrings which may now have appeared should be stretched.

11. Wadding and bandage are applied in such a manner that the head of the femur is held tight against the acetabulum by turns round the knee and opposite side of the pelvis, and the thigh in extreme abduction (90 degrees) and to extreme hyperextension. Over this a thigh plaster-of-Paris bandage is applied. As Dr. Lorenz puts it, a child with both hips thus put up "looks like a jumping-jack after you pull the string."

The plaster is kept on six or seven months. The child is encouraged, after a few days, to walk and jump about on both legs, a high shoe making up for lack of relative length on the affected side. The constant impact of femur against acetabulum obtained by the jar of walking is an important factor toward final success.

Dr. Lorenz feels that a good functional, as well as anatomical, result is only likely in cases between three and seven years. The oldest case he has treated is twenty-three years. Where he fails to reduce the hip, the muscle-

stretching, followed by long fixation of the thigh in the manner already described, gives a fair functional result. In one case in Boston, that of a boy 9 1/2 years of age, he was unable to get the head into the acetabulum. Editorial (Boston Medical and Surgical Journal, Jan. 1, 1903).

PLACENTA PRÆVIA, TREATMENT OF.

A woman with placenta prævia ought not to die, except in rare instances, such as air-embolism or the hæmorrhagic diathesis. A case of placenta prævia should not be half-heartedly treated. If the child is viable, labor should be induced. When the hæmorrhage is moderate, one may wait, provided the patient remains in bed and is in a well-appointed hospital. No one method of treatment will meet all cases. The accoucheur should have all known measures at his command. The young practitioner should follow Schroeder, who says: "That accoucheur will have the best results in placenta prævia who has the least regard for the child." The man with his first case of this kind should direct his efforts to saving the mother. Later on, when he has attained obstetrical judgment, he may make an earnest effort to lessen the mortality of children. Placenta prævia is more formidable than most laparotomies, and the patient should be in a well-equipped, obstetrical operating-room. The best way to induce labor is to puncture the bag of waters and to put a colpeurynter in the uterus, resting on the placenta and pressing this against the cervix, and then to put traction on the tube. After labor is begun the treatment must be pursued with vigor, and the doctor must not leave his patient until she is delivered and all danger is past. The treatment then is as

follows: The objects are to stop the hæmorrhage, to empty the uterus, to secure contraction and retraction of the uterus, and to insure complete hæmostasis. De Lee (*American Gynecology*, Aug., 1902).

PLAGUE, ETIOLOGY OF.

During the outbreak of the plague in Elizabethport in 1901 observation in 33 cases showed that relatives of patients did not contract the disease. In only one instance did 2 members of the same family have it. Here, infection from one to the other is negatived by the fact that the second was not taken ill until twenty days after contact with the first, but both worked at the same place, which was shown to contain infected rats. "Contacts" did not contract plague. In only 2 cases did "contacts" among these 33 contract it, and then only the fourteenth day after exposure did the disease appear. Both of these patients also worked and slept in the same building, infected with diseased rats. Neighbors of the plague patients did not contract the disease. Had the infection been from man to man, the house in which a plague patient lived would have shown itself a center of infection, by persons living in the adjoining houses and who frequented the patient's house becoming infected; but this never occurred except when dead rats were found in the patient's house. The dwelling-houses of the patients were widely separated, but nearly all worked in the same rat-infested area. The 33 cases were widely scattered over the town, as regards dwelling-place, and it is notable that persons having had contact with the patients did not take the disease. W. J. Blackmore (*Lancet*, Oct. 11, 1902).

PLAGUE INOCULATION AND TETANUS.

"A terrible thing happened a few days ago in the Gujrat district just north of us. You know how badly the plague attacked the Punjab last year, reaching Lahore, which had hitherto been immune. Of course the hot weather checked it, but a great outbreak is dreaded this autumn. Though some doctors question its efficiency, statistics up to the present seem altogether favorable to inoculation with a plague serum manufactured in Bombay as a preventive. The great masses of the people, however, are terribly afraid of it. . . . Wild stories of all sorts are circulated, and it is forbidden to Mohammedans by many of their religious leaders. So extreme care has been taken to remove prejudice and a great effort has been made to induce the whole population to be inoculated at the beginning of this cold season. Twenty doctors came from England to the Punjab alone for the work of inoculation, and the work was going on with moderate success in spite of opposition."

Referring to the fact that the local tumefaction produced by the injection was one of the terrifying accompaniments of the inoculations, the writer adds: "The maker of the serum, after experiment, came to the conclusion that this could be avoided by strengthening the serum and diminishing the dose. Forthwith he sent out some of his new mixture without sufficiently testing it, and a supply came to the Punjab. In a village of Gujrat a doctor, and if I have the story correctly, the deputy commissioner, were trying to persuade the inhabitants to be inoculated. They demurred, but finally, when the deputy commissioner bared his arm, they assured him that he need not be inocu-

lated, that they were satisfied with this exhibition of his willingness, that they trusted his word. More than twenty were inoculated with the new serum and in a few days every man of them died of lockjaw. Of course inoculation for plague is at an end in India. Whether others have used the same serum we don't yet know. The last man of the village in Gujrat died Sunday." Lahore Correspondent (American Medicine, Dec. 20, 1902).

[*Commentary.*—This graphically illustrates our statement on page 7 of this journal, to the effect that insufficiency of the adrenal system is the underlying pathological element of tetanus. In all the cases mentioned the disease occurred irrespective of any infection with the bacillus tetani. The process adopted by the manufacturer for the purpose of "strengthening" the serum to diminish the dose has not as yet been ascertained, but the subsequent investigation showed that several of the bottles of serum had become putrid (British Medical Journal, Dec. 20, 1902). However generated in the serum itself, the toxic promptly caused adrenal insufficiency, the resulting accumulation of waste-products giving rise to the tetanic convulsions which ended in death.

Bacelli's carbolic-acid treatment of tetanus was described as follows by Dr. H. C. Wood, Jr., in Merck's Archives, May, 1899 (see article, "Tetanus," our ANALYTICAL CYCLOPEDIA OF PRACTICAL MEDICINE, vol. vi):—

"If the tetanus is of traumatic origin, the wound is thoroughly cleansed with a strong antiseptic solution (either corrosive sublimate or carbolic acid). The patient is then placed in as quiet an apartment as can be obtained; the ordinary rules of diet, etc., are carried out;

and subcutaneous injections of a 2-per-cent. solution of carbolic acid given at two- or three- hour intervals. If the case is one of only moderate severity, commencing doses of about 3 grains in the twenty-four hours may be used. This dose should, however, be rapidly increased to at least double or triple the quantity. Along with the carbolic acid other remedies, as morphine or chloral, may be given, as thought necessary. . . . The discoverer lays special stress on the local disinfection of the wound."

In the light of our views, depresso-motors should only be used when, in the course of violent convulsions, asphyxia, is threatened. Morphine in therapeutic doses stimulates the adrenal system; hence it can be used without compromising the action of the curative agent. During convulsions the chlorides are rapidly consumed, and enemata or intravenous injections of saline solution are theoretically indicated. They also greatly enhance the elimination of toxins and waste-products by the kidneys.—S.]

PREGNANCY AND THE PUERPERIUM, THE BLOOD IN.

When the blood-generation fails to keep pace with the increased vascular area a serous dilution of the blood takes place; in the majority of cases this is not serious, and can be overcome by simple hygienic measures: fresh air, good food, and the overcoming of constipation. Cases in which the vitality is overcome by the increased demand for nutrition may call for iron or other hæm-atinic treatment; the regeneration of the blood is partly effected by the lessening of the vascular area after labor and subsequent transudation of fluids of the blood into the tissues; the leuco-

cytosis is due to increased action of enlarged lymph-glands of the pelvis, and in part to increased metabolism, which causes a somewhat toxic condition. Its decrease is caused by the lochial discharge. Its persistence is accounted for by the fact that the involution of the hypertrophied pelvic organs and breasts is accomplished in a great measure by the leucocytes; the study of the blood of a woman delivered by a Cæsarean operation shows the same general behavior of the blood-constituents as does that of women after normal labors. G. B. Pray (*American Gynecology*, Oct., 1902).

RADIOTHERAPY AND PHOTOTHERAPY.

While it is too early to form definite and sweeping conclusions regarding the value of radiotherapy and phototherapy in all the affections in which they have been employed, the authors' experience leads them to believe that in tuberculosis of the skin these methods of treatment are superior to any others now known to them. In lupus erythematosus, phototherapy has in their hands given very satisfactory results, far better than those they have obtained by any other method.

In superficial carcinoma involving considerable areas, radiotherapy is undoubtedly preferable to all other known methods of treatment. Superficial lesions more circumscribed are equally amenable to treatment with the x-rays, though in many instances small tumors can be removed more promptly by complete erasion or excision. For many of these circumscribed growths the authors are now inclined to advocate removal either with the knife or curette, followed by a series of treatments with the x-rays. In operable carcinoma of the skin, which includes deeper tissues,

complete extirpation followed by x-ray treatments is advocated. Where the growths are inoperable radiotherapy offers a possible chance of recovery or of lessening the discomfort of the patient. As a result, however, of personal observations of their own and other cases, the authors believe that in exciting an inflammation in carcinoma one is, to some extent at least, encouraging an extension of the growth through a dissemination of the cancer-cells to normal (or inflamed) tissue surrounding the growth, and of favoring metastases. This possibility constitutes a danger in the treatment of carcinoma by the x-rays that has not been sufficiently recognized.

The value of radiotherapy in extensive cases of hypertrichosis has been fairly well established by other observers. It has given the authors excellent results in the majority of cases of psoriasis treated. It has unquestionably been used successfully in many of the chronic inflammatory diseases of the skin, especially in acne, rosacea, folliculitis, and suppurating wounds; but, until this agent can be employed with greater accuracy, it should be reserved for those cases in which better known and better controlled methods are not successful.

It is not yet possible to draw definite conclusions with reference to the comparative values of radiotherapy and phototherapy. The former is, for the most part, readier of application and apparently has a wider field of usefulness than the latter. In lupus erythematosus, however, phototherapy was repeatedly given excellent results where the x-rays have failed altogether or aggravated the condition. Judging from the authors' experience and from the larger experience of Finsen and others in the treatment of tuberculosis of the skin, they believe that in this disease

phototherapy gives, in the end, results as rapid as those obtained with the x-rays, with better cosmetic effects and without danger of deep burns.

There is no doubt that both phototherapy and radiotherapy are valuable additions to our methods of treating certain diseases. There is also no doubt that their field of usefulness eventually will be proven much more restricted than that in which they are employed at present. Unfortunately there can be no doubt, also, that harm is doing and will be done by the action of x-rays in the hands of the unskilled or the unscrupulous. No one should attempt to employ radiotherapy who has not first carefully studied the subject and followed the work of some expert. Even with such preparation great caution is needed in acquiring experience with this new therapeutic agent, its accurate control and the character of results obtained being still subjects of discussion. J. N. Hyde, F. H. Montgomery, and O. S. Ormsby (*Journal of the American Medical Association*, Jan. 3, 1903).

RECTAL STRICTURE IN WOMEN.

The writer's operation consists in: (1) division of the recto-vaginal septum along the median line through the perineum and to a point above the stricture; (2) suture of the rectal to the vaginal mucosa on either side with catgut. This represents a primary operative stage. The second stage of the operation is not performed until firm union has occurred and the suppurating surface of the rectum has recovered. The second operative stage may be undertaken four months or more after the first and consists in: 1. Section of the vagina on both sides, with the formation, by blunt dissection, of two flaps on either side. The posterior flaps are turned into the

rectum to form the anterior portion of the rectum, and the anterior flaps are united to form the posterior wall of the vagina. 2. Suture of the vaginal flaps, the posterior by continuous silk-worm gut suture, and the anterior by the figure-of-eight suture. T. J. Watkins (*American Journal of Obstetrics*, Oct., 1902).

SARCOMA, INFLUENCE OF THE ROENTGEN RAYS IN.

The results in cases thus far treated prove that the Roentgen rays have a remarkable inhibitory action upon the growth of all forms of malignant disease, and that this is especially true of sarcoma. The action in many cases of far-advanced and inoperable malignant disease may result in the total disappearance of the tumors, often without any breaking down of the tissues, the new growth being apparently absorbed. Whether the patients have been cured or whether the disease has been merely arrested to reappear at some future date is a question that time alone can decide. Recent observations and experiments upon the various forms of carcinoma and sarcoma prove that an agent supposed to be of value only in a very limited class of superficial epitheliomas promises to be of as great or even greater value in practically every variety of cancer. While at present there is little evidence to show that deep-seated tumors in the abdomen and pelvis can be cured or benefited by the Roentgen rays, there is still some reason to hope that, with improved apparatus or with greater knowledge and skill in using the apparatus that we now have, even these cases may be benefited. The Roentgen rays have a very marked influence upon the pain of nearly all types of malignant tumors, causing entire relief in the

majority of cases. Ten personal cases are reviewed. Coley (*Medical News*, Sept. 20, 1902).

SERUM-THERAPY, NECESSITY FOR EARLY AND ABUNDANT.

E. Calmette (*Bulletin Médical*, July 9, 1902) argues that serum-therapy is absolutely innocent of the by-effects that have been ascribed to it. Recent research has conclusively demonstrated its entire harmlessness, among others that of Denys, of Louvain, published in the *Presse Médicale Belge*, of April 27th, which showed that 1 to 19 parts of human blood mixed with 1 part of horse-serum showed no signs of the dissolving of red corpuscles when kept at 20° C. for twenty-four hours, or at 37° C. for three days. Even 49 parts of horse-serum to 1 part of blood caused no change in the corpuscles. People die notwithstanding serum-treatment when the microbial toxins have fastened on the tissues before the antitoxic serum is used. Hence the imperative necessity for early resort to it. They die also when the diphtheritic intoxication has paralyzed the centers which preside over the production of the polynuclear leucocytes that play such an important part in the defense of the organism against microbial invasion. Hence the necessity for large doses of the antitoxic serum. (*Journal of the American Medical Association*, Aug. 9, 1902.)

SUPRARENAL CAPSULE, EFFECT OF EX- TIRPATION OF THE MEDULLA OF THE.

The effects noted in rabbits and cats subjected to this operation are thus described by the authors: When the medulla was entirely destroyed and the cortical portion left intact, the animals died in a short time with the acute

symptoms seen after extirpation of the suprarenals. If, however, some part of the medulla were left, life was prolonged from three to four weeks, with symptoms of a special cachexia (anorexia, psychical depression, lowered temperature, and marked loss of flesh). The authors deduce from these experiments that a specific function of vital importance depends upon the integrity of the medulla of the suprarenal capsule. Further investigations are to be carried on with the view of ascertaining the rôle—apparently a minor one—of the cortical portion. G. Vassale and A. Zanfognini (*Riforma Medica*, Oct 31, 1902; *Medical News*, Dec. 13, 1902).

SUPRARENAL EXTRACT IN THERAPEU- TICS.

The following conclusions have been drawn by the author from his observations on suprarenal extract and adrenalin: 1. Suprarenal extract is an exceedingly energetic vasoconstrictor, and may, therefore, be successfully employed as an hæmostatic in case of hæmorrhage in internal organs (lungs, stomach, intestines, kidneys, and uterus), as well as in external mucous membranes; also to prevent hæmorrhage during operation on mucous membranes. 2. Suprarenal extract is useful in acute, and will probably prove useful also in chronic, inflammations of mucous membranes. 3. The employment of the extract is not accompanied by any harmful or unpleasant effects. Alexander Ivanoff (*Philadelphia Medical Journal*, Dec. 27, 1902, from *Meditzinskoje Obosrenije*, vol. lvii, No. 11).

SUPRARENAL GLANDS, HÆMORRHAGES INTO THE.

Small ecchymoses into the adrenals occur frequently in the various infec-

tious diseases, and are to be considered toxic in origin. Hæmorrhagic infarction of both adrenals often leads to peritonitis and collapse, and may result in death. It may, however, occur without any of these sequences. Large hæmatomata may be formed in the adrenals. Hæmorrhages into these glands may also occur under the following circumstances: Traumatic influences (under this class is found the form seen in the newborn); hæmorrhagic diathesis; thrombosis of the suprarenal veins, which is the most common cause; and bacterial capillary embolism, which occupies the second rank. The thrombi can affect the trunk or the tributaries of the suprarenal veins; they can occur in both or only in the right organ; they are to be regarded as marantic thrombi, occurring, as a rule, only in individuals suffering from some form of chronic disease. The peculiar anatomical disposition of the vessels favors their formation. A primary suprarenal disease does not precede these cases. Under the cases of bacterial capillary emboli are included those in which neither clinically nor anatomically can septic disease be observed. Bleeding into the adrenals may lead to atrophy of the organ. M. Simmonds (*Virehow's Archiv*, Nov. 3, 1902; *Medical News*, Dec. 27, 1902).

TUBERCULIN AS A MEANS OF DIAGNOSIS.

Patients may react to tuberculin and no evidence of tuberculosis be found at autopsy. Six cases reviewed by the writer seem to demonstrate that completely healed tuberculosis may react. He concludes that cases of proved tuberculosis may not react to the maximum doses, and that the evidence is not conclusive that other diseases than tuberculosis may react to tuberculin. The margin of error of the tuberculin

test is considerable and probably not less than 10 per cent.

The maximum dose should be higher than 4 milligrammes, and not more than 10 milligrammes. Small increasing doses are not advisable, as the reaction is not so likely to be distinct on account of the tolerance which may be produced. An initial dose of 3 to 5 milligrammes, followed by the maximum dose, is better. The temperature should usually be normal before injections are given. When the temperature is distinctly above normal a negative result is of no value, as these patients will frequently not respond at all, even to large doses.

It seems quite certain that the glycerin extract of tuberculin deteriorates, and a fresh bottle should frequently be opened, care being taken to keep it in a cool, dark place. The 0.5-per-cent. carbolic-acid solution should be made up on the day it is used if possible. The author believes that deterioration of tuberculin is the principal factor in producing delayed reactions.

While he admits that tuberculin injections are not entirely devoid of ill effects, he believes that their use among suitable patients is no more dangerous than the use of chloroform and ether for diagnostic purposes, and is quite as justifiable as an early diagnosis of tuberculosis is of the greatest importance. About 40 per cent. of all female patients admitted to the hospital were found to react to tuberculin. J. D. Madison (*American Medicine*, Dec. 20, 1902).

TYPHOID FEVER.

The authors summarize a study of 71 cases of typhoid fever treated in the Children's Hospital of Philadelphia during 1901, by Hand and Walker, as fol-

lows: 59.1 per cent. of the cases were in boys; 40.9 per cent. were in girls. There was no case under 2 years of age. The prodromal symptoms in order of frequency were as follows:—

Fever	100.0 per cent.
Headache	70.0 per cent.
Diarrhœa	50.0 per cent.
Abdominal pain	32.0 per cent.
Constipation	30.0 per cent.
Vomiting	26.0 per cent.
Nose-bleed	18.0 per cent.
Delirium	7.0 per cent.
Chill	2.8 per cent.
Convulsions	1.4 per cent.
Bloody diarrhœa	1.4 per cent.

The shortest duration of the fever was 9 days; the longest, 44 days. The average duration was $24\frac{1}{3}$ days. The Widal reaction was positive in 87.5 per cent. of the cases in which it was tried. Enlargement of the spleen was present in 83 per cent. Fifty-two of the 65 white children, or 80 per cent., showed typical rose spots. Constipation was present in 42 per cent. and diarrhœa in 38 per cent. Delirium was sufficiently marked to be noteworthy in 11 cases. Intestinal hæmorrhage occurred in 4 cases, in 3 being very slight, in 1, moderate, but not causing any shock or interruption in the favorable course. Nose-bleed occurred in 3 cases. Relapses occurred in 6, or 8.5 per cent. There were 3 deaths, giving a mortality of 4.2 per cent. One died of noma, 1 of diphtheria, and 1 of toxæmia, the mortality of uncomplicated typhoid fever thus being less than 1 per cent.

The conclusions shown by Hand and Walker were that, while typhoid fever may sometimes run a very mild, or even abortive, form in children, its clinical picture does not differ from that in adults in any essential feature save in

the somewhat lower mortality. T. M. Rotch and J. L. Morse (Boston Medical and Surgical Journal, Dec. 18, 1902).

TYPHOID FEVER, CARDIAC FAILURE IN.

The heart should always be carefully watched during the course of the fever, so that, as soon as dilatation commences, as shown by an accentuated pulmonary second sound in association with alteration of the first sound and displacement outward of the apex-beat, the hypodermic injection of strychnine should be started. For its success it should be employed early, and not called in only where cardiac dilatation is well marked. Strychnine thus given is far superior to digitalis and strophanthus by the mouth. The author has no real experience of digitaline hypodermically. When he has employed this preparation, it has been in combination with strychnine. H. D. Rolleston (Treatment, October; New York Medical Journal, Dec. 27, 1902).

TYPHOID FEVER, DIET IN.

The author marshalls a strong array of facts in favor of more liberal feeding in typhoid fever. It is strange, in view of the fact that the exhaustion and wasting are so pronounced in this disease, and since no specific remedy exists, that no determined effort is made to increase the resistance of the patient by systematic and judicious feeding. Fitz has shown by a statistical study of the cases occurring in the Massachusetts General Hospital from 1821 to 1899—a period of seventy-eight years—that the mortality has varied very little from the days when calomel, tartar emetic, and bleeding were practiced, to the present time; so that little can be hoped for in the light of our present knowledge as far as therapeutics is concerned. The

disease is too strictly a self-limited one to hope for much even from liberal feeding, as far as the duration of the actual attack is concerned; but to those who have permitted themselves to overrise a deeply-rooted prejudice, an increase in the dietary materially lessens the period of invalidism, and restores the patient to health very promptly after the fall of temperature. Of course, profoundly toxic or comatose cases cannot be fed for obvious reasons, but to the average case, in addition to milk, bread, potato, cereals, gelatin, eggs (raw or cooked in any fashion), spinach, oysters, fish, custards, puddings, soups, even meat can be given with impunity. To those who have made many autopsies it is well known that no matter what the diet the contents of the small bowel are always liquid, and even in the large bowel down to the splenic flexure. It is not the diet which predisposes to hæmorrhage or perforation of the bowel, but the nature of the morbid lesion itself. In no other intestinal lesion do we exercise such extreme caution in feeding. As a matter of fact, it is very probable that a more extended trial of the plan herein advocated will serve to lessen the tendency to these complications by increasing the tone and vigor of the patient and in consequence the resistance. Robertson (Proceedings of the Philadelphia County Medical Society; International Medical Magazine, Nov., 1902).

TYPHOID TOXIN, NATURE OF THE.

While all analogy leads to the conclusion that typhoid fever is the result of a toxin secreted by the typhoid bacillus, no success has hitherto attended the efforts of the bacteriologists in their attempts to isolate the toxin. Some experiments by Allan Macfadyen and Sid-

ney Rowland, communicated recently to the Royal Society and reported in its Proceedings for October 31st, seem likely to lead to a solution of the question. The authors first solved the question of whether the toxin was intracellular or extracellular, in favor of the former view. This they did by substituting for the usual media others more closely approaching in constitution the natural body-soils of the bacillus, viz.: the actual intracellular juices, in a fresh condition, from the intestinal mucous membrane, glands, and spleen of the ox or calf. On this they grew the bacillus aërobically, anaërobically, with human serum, and after heating to 55° C. for twenty minutes. After four or six weeks' growth the filtrate was tested, with negative results, on guinea-pigs. The bacillus itself was next investigated by growing it on beef-broth agar, and, after careful washing in distilled water, disintegrating it mechanically at 180° C. The authors find that "if such a disintegrated mass be freed from whole bacilli (if present) and from other suspended insoluble particles by centrifugalization, an opalescent fluid results, which on inoculation into animals in small doses invariably proves toxic or fatal. It is therefore concluded that the typhoid bacillus contains within itself an intracellular toxin." These conclusions, apparently justified by the premises, clearly indicate the direction for further research. Editorial (New York Medical Journal, vol. lxxvi, No. 26, 1902).

X-RAYS; THEIR USE IN CANCER AND KINDRED DISEASES.

The writer quotes Henry Morris's statement to the effect that "the term 'cancer' is used in a general sense to include all forms of malignant new

growths, and therefore embraces rodent ulcer, sarcoma, and lymphosarcoma, as well as epithelioma and the other varieties of carcinoma."

In the treatment of *rodent ulcer* the writer concludes that the x-rays have already secured for themselves an established position. In nine cases out of ten one can, in his opinion, guarantee a cure, and this within the space of a few weeks, without pain, and with little inconvenience to the patient. Many cases have been reported in which a cure has been brought about by the Finsen treatment, but in his own hands not only had the x-ray treatment yielded better results, but their application had been found more certain, quicker, and less painful than the light treatment. In by far the larger majority of cases which had come into his hands the ulcers had completely healed in the space of six weeks, the actual treatment having only occupied from eight to twelve exposures of ten minutes' duration. In a few instances a renewal of the x-ray treatment had been necessary; but in most of them, once having secured a limited dermatitis, Nature had done the rest.

Dr. Hall-Edwards contends that the production of a limited amount of dermatitis is a *sine qua non* to successful treatment in these cases, and is convinced that it is the inflammatory condition which, in some obscure way, brings about the desired result. His method of x-treatment is as follows: He first prepares a mask, made of plaster-of-Paris bandage and tinfoil, which covers the whole of the face with the exception of the area requiring treatment. These masks he has found perfectly safe, even when lengthy exposures have been given at a short distance from the tube. He then exposes the part to

the influence of the rays for ten minutes each or every other day, at a distance of from 3 to 8 inches from his tube, until a well-marked dermatitis is visible round the ulcer. In ordinary cases his work is now done, for in the space of a few weeks the ulcer will heal. The cases which fail to yield to this treatment are those in which bone or cartilage are laid bare, or in which the ulcer has burrowed to such an extent that the bottom of the wound cannot be directly exposed to the rays. Such cases are common when the disease attacks the orbit.

In *cancer* the writer had found that the action of the rays was specially marked when the lesion was superficial, although they appeared to have a good effect upon deeply-seated growths, upon which the light treatment can have no effect. In these cases the chief danger was that of producing a severe burn upon the skin through which the rays had to pass before they could reach the growth. There exists a considerable difference of opinion as to the effects of producing a dermatitis. Here also, he had found that no result can be looked for unless a limited amount of dermatitis was produced, and his methods, as described above, had proved successful. Moreover, he had been led to conclude that in such diseases as epithelioma the amount of good done was in direct ratio to the amount of dermatitis produced, so long as this did not exceed the scientific limit.

Dr. William J. Morton, who had used the x-rays in cases of sarcoma, epithelioma of the face, and mammary and gastric carcinoma, had observed "reduction in the size of the tumors, softening and absorption of lymphatic nodules, disappearance even of lymphatic en-

largements not directly submitted to treatment, removal of odor, and cessation of discharges." Dr. Morton had also expressed the opinion that the treatment had a curative effect in internal cancer, and that in the x-rays we possess more nearly a solution of the problem of curing cancer than by any other method of treatment.

The writer has found that in a very large majority of cases the pain is relieved by the rays; granting that they could do nothing more, they should, he thought, gain our respect; they could do more, however. In cases of epithe-

lioma of the lip in men, one of the conditions which give rise to much inconvenience and much pain is the growth of the beard. The hairs adhere into the ulcerated surface, and occasion much pain and irritation. The beard can be entirely removed by the x-rays, and the patient thereby afforded much comfort and relief. He refers to the fact that in a few isolated cases of cancer the rays give no relief to the pain, and that some are recorded in which it was undoubtedly made worse. J. Hall-Edwards (Archives of the Roentgen Ray, Dec., 1902).

Books and Monographs Received.

The editor begs to acknowledge, with thanks, the receipt of the following books and monographs:—

Practical Gynecology, Obstetrics, and the Menopause. By A. H. P. Leuf, M.D., Philadelphia. The Medical Council, Philadelphia.—Eighteenth Annual Report of the Bureau of Animal Industry for the Year 1901. United States Department of Agriculture, Washington, D. C. 1902.—X-rays as a Therapeutic Agent. By A. V. L. Brokaw, St. Louis, Mo. 1902.—Typhoid Fever in Infancy and Childhood. By I. A. Abt, Chicago, Ill. 1902.—Report of Ninety Cases of Typhoid Fever in Infants and Children. By I. A. Abt, Chicago, Ill. 1902.—Examination of a Genito-urinary Patient by the General Practitioner. By Ferd. C. Valentine, New York City. 1902.—The Morning Drop; its Treatment. By Ferd. C. Valentine, New York. 1902.—Advice to Gonorrhœal Patients. By Ferd. C. Valentine, New York City. 1899.—The Urine from Each Kidney. By Ferd. C. Valentine, New York City. 1902.—Littoral California. By William A. Edwards, Coronado, Cal. 1902.—Remarks on Intrathoracic Pressure, with the Illustration of the Author's Method of Lung Immobilization. By Charles Denton, Denver, Col. 1902.—Malarial Infection a Potent Factor in Asthenopic Conditions. By J. Lawton Hiers, Savannah, Ga. 1901.—The Roentgen Ray in Obstetrics. By J. B. Cooke, New York. 1902.—Weight and Diet in Pulmonary Tuberculosis. By J. F. Russell, New York City. 1902.—Contribution à l'Étude de l'Otite Moyenne Aiguë d'Origine Diabétique. Par le Dr. Louis Bar, de Nice, France. 1902.—Foot-and-Mouth Disease; Warning to all Owners of Cattle, Sheep, and Swine. United States Department of Agriculture, Washington, D. C. 1902.—Practical Suggestions for Fruit-growers. By H. P. Gould. United States Department of Agriculture, Washington, D. C. 1902.—Manufacture of Table-sirups from Sugar-cane. By H. W. Wiley, United States Department of Agriculture, Washington, D. C. 1902.

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THE TREATMENT OF ACUTE SEPTICÆMIA BY THE INTRAVENOUS INFUSION OF FORMALDEHYDE.

DR. C. C. BARROWS (New York Medical Journal, Jan. 31, 1903) gives in this article the details of his case of puerperal septicæmia successfully treated by means of intravenous infusion of formaldehyde. After a brief reference to recorded experiments, he gives the details of a series performed by Professor Ewing, of Cornell University, which showed that in the rabbit, at least, a solution of formaldehyde representing a proportion of 1 to 50,000 to the animal's blood could be used with safety, and without giving rise to morphological changes in the red blood-corpuscles. Dr. Barrows, therefore, used a solution of corresponding strength in the treatment of his case, the details of which are as follows:—

"The patient, a negress, of slight frame, 26 years old, and married, was admitted

to Ward 22, Bellevue Hospital, on December 25, 1902. She was in labor, and at the time of her admission was having a chill. Her temperature was 104.2° F., her pulse was 124, and she was breathing at the rate of 30 per minute. There was a fetid, bloody discharge from the vagina. She was delivered at six o'clock on the following morning of a macerated, decomposed female foetus of about six months' growth. After delivery of the secundines the patient was given an intra-uterine injection of a 1 to 10,000 solution of bichloride of mercury. One hour after delivery, at 7 A.M., she had a severe chill, accompanied by a rise of temperature from 99.4° F. at 3 A.M. to 105° F. at 7 A.M. At 2 P.M. the same afternoon her uterus was irrigated with hydrogen peroxide, followed by 2 quarts of normal saline solution. A considerable quantity of clots and shreds of tissue was obtained as a result of the douche. She was then transferred to the Gynæcological Service, Ward 23, where she was curetted on December 27th, and a large amount of decomposed membranes and placental tissue removed. She then showed signs and symptoms of pronounced general sepsis. On December 25th, the day of her admission, a microscopical examination of the blood was made, which showed the absence of malarial organisms and a leucocytosis of 18,000. On December 30th a blood-culture was taken by Dr. Buxton in four flasks of bouillon, which gave a pure culture of streptococcus. At this time her urine showed albumin to a considerable extent, but no casts. The patient was seen by the writer then for the first time. Her temperature was 108° F.; her pulse 150 to 160, small, and thready; and her respiration, 38. She was in a low, muttering delirium. There were present absolutely no local signs or symptoms, and from all external appearances the patient was rapidly approaching death from a profound general sepsis. She was at once given an intravenous infusion of 500 cubic centimeters of a 1 to 5000 aqueous solution of formalin. In three hours her temperature had fallen to 105° F., and in six hours it had fallen to 101° F., her pulse being 104 and her respiration 28. For three hours the temperature remained at 101° F., when it gradually began to rise until it reached 103° F., her pulse having risen to 120. It remained at 103° F. for three hours, when it plunged downward, until in three hours the thermometer registered by the rectum only 95° F. The pulse had then fallen to 86 and the respiration to 22. In twelve hours the temperature had reached 102° F., and the pulse 110. It then dropped to normal, but rapidly rose to 103° F., although the pulse did not go higher than 112. Although a second blood-culture had been taken, there had not been time for a report, so it was decided to give her a second infusion, 750 cubic centimeters of the same solution being then given her. There was a slight chill without a further rise of temperature, which in the course of twelve hours fell to normal, where it has practically been since. The woman is up and about the ward, and from all appearances is entirely well. Several blood-cultures have been made, and none taken since the first infusion have shown any streptococci. Frequent microscopical examinations of the blood have been made, and no changes have been found in the red corpuscles. The albumin in the urine has cleared up, and no blood has appeared in this secretion."

The author lays stress upon the fact that the value of the procedure depends on its being correctly and scientifically applied. Professor Ewing's experiments in rabbits having been conducted with salt solution as excipient for the formalin, and no change in the latter occurring, he also advises the use of the normal solution instead of distilled water, in future cases.

Commentary.—In the light of prevailing views the foregoing method of treatment does not seem capable of standing scrutiny with experimental evidence as standard, as shown by the adverse criticism already published. Interpreted from the standpoint of our views, however, *i.e.*, with the functions of the ductless glands as factors of the process involved, the results obtained by the author are not only accounted for, but they represent a valuable contribution to our knowledge of scientific therapeutics.

Dr. Barrows refers to the "well-established fact that solutions of formaldehyde in dilutions of even so little strength as 1 to 250,000 are satisfactory germicides." As in the foregoing case the quantity injected was calculated to represent a proportion of about 1 to 50,000, the margin was sufficiently great to warrant—in the light of prevailing doctrines—the deduction that a bactericidal action of the antiseptic used had procured the recovery. Still, the *blood* of the experimental animals was alone, as is usually the case, taken as the basis of the calculation: a feature which involves the assumption that the remedy when introduced into the vascular system does not leave the latter. Are we justified in taking this factor of the problem for granted? A negative answer is vouchsafed by the experiments of Sollmann (*Archiv für experimentelle Pathologie und Pharmakologie*, Bd. xlv, H. 1 und 2, 1901), who found that intravenously injected solutions of sodium chloride and potassium disappeared in great part from the circulation *per se* and passed into the "tissues" by physiological filtration, then out with the urine. The itinerary of the fluid and salts up to their final excretion was completed in about half an hour, but the greater portion of the added fluid had disappeared in three minutes. Instead of the increase of the quantity of blood in the vascular system which the addition of the fluid would normally suggest, the blood aggregate was found to be diminished. These observations showed that the addition of even "large quantities" (Sollmann) of alkaline fluids does not augment the fluid contents of the blood-vessels. This is further sustained by a careful study of the fluctuations of blood-pressure by J. B. Briggs (*Johns Hopkins Hospital Bulletin*, Feb., 1903) aided by sphygmomanometric (modified Riva-Rocci) observations. Dr. Briggs writes: "Our results indicate that it is useless to infuse with any idea of filling up the depleted vessels [in shock]: the water and salt are excreted probably quite as rapidly as they pass into the circulation." Though the author refers to subcutaneous injections, the fact remains that the fluids of the *extravascular* liquid-containing interstices and channels, the areolar tissue-spaces, the lymphatic circulation, etc., should also be taken into account when the proportion of any agent introduced into the organism to the "blood" is to be taken as the basis of experimental work.

The proportion of blood to body-weight in the rabbit is 1:19, while in man it is 1:13, but if to this we add the lymph and chyle, and other body-fluids into which the drug can easily penetrate, we are brought to 4:19 in the rabbit and 4:13

in man. We no longer have, therefore, the 1 to 50,000 solution of formaldehyde employed by Dr. Barrows, but a 1 to over 200,000 solution. As this author states that "solutions of formaldehyde of even so little strength as 1 to 250,000 are satisfactory germicides," this quadruple increase of the systemic excipient *may* have deprived the formaldehyde of its bactericidal attributes; but we entertain grave doubts as to this, inasmuch as the use of stronger solutions should prove all the more active. Indeed, a series of experiments by Dr. Fortescue Brickdale (Lancet, Jan. 10, 1903) show that no advantage is derived from the use of stronger solutions. "It may be said," concludes this investigator, "that at present there is no experimental evidence which would warrant the assumption that the course of a septicæmia in animals can be influenced favorably by the intravenous injection of antiseptic substances, and that the only result to be obtained by pressing such a treatment beyond the maximum non-toxic dose is to hasten the death of the animal." He then closes with the remark: "In view of the results described in this paper and those obtained by former investigators it seems useless to continue trying to apply clinically a method which, while by no means free from special dangers and difficulties, is at present unsupported by any experimental evidence either as to its present advantages or future prospects."

These deductions are warranted when the whole question is considered from the standpoint of present doctrines as to the action of antiseptics; they are not, however, when, in the light of our views, the action of all toxics upon the anterior pituitary body, the governing center of what we have termed the "adrenal system," is taken into account.

In our January issue we wrote (page 6): "It became evident that, instead of acting directly upon the blood or cellular elements, poisons either stimulated or depressed the functional activity of the adrenal system, thus increasing or reducing the production of adrenal secretion, and, therefore, of oxidizing substance in the plasma. Radical changes in prevailing doctrines as to the manner in which general infections, or other forms of poisoning, produced their effects on the organism thus seemed to impose themselves. In fact, the mass of confirmatory evidence found on all sides (including the effects of removal of the adrenals, the thyroid, or the anterior pituitary body, and of the use of adrenal and thyroid extracts) proved to be incontrovertible. We were thus led to conclude that what are now considered as symptoms of infection or poisoning are all manifestations, more or less severe, of *overactivity or insufficiency of the adrenal system*. Indeed, *the physiological action of remedies was also traced to the anterior pituitary body*, the governing center of this system."

Another quotation from our paper of the same date now applies directly to the discussion in point. "We were also led to conclude, in this connection, that the majority of drugs, toxins, physiological toxalbumins, etc., *stimulated* the adrenal

system, when the proportion of these agents in the blood did not exceed a certain limit, and that when this limit was exceeded, *i.e.*, when the dose administered, or the amount of toxins secreted by bacteria, etc., was excessive, it either *inhibited* or *arrested* the functions of this system. A large dose of quinine may, for instance, cause adrenal overactivity, a flushed face, a bounding pulse, etc.; but, if the dose is excessive, it will overwhelm the adrenal system, the signs of which are always similar, *i.e.*, pallor, a weak and rapid pulse, etc." The only logical inference to be derived from this interpretation now seems to us to be the following: *While Dr. Barrows saved his case of septicemia by stimulating the adrenal system of his patient by means of a weak solution of formaldehyde, Dr. Fortescue Brickdale killed his rabbits by using excessive doses: i.e., doses which overwhelmed their adrenal system.*

In the light of this interpretation, similar results should be obtained in other cases provided the strength of the solution recommended by Dr. Barrows be not exceeded, and particularly if his recommendation that "normal salt solution be used for the formalin solution" be carried out, since he continues: "It has been found that no change takes place in the formaldehyde in this solution." We emphasized in the January MONTHLY CYCLOPEDIA the fact that the alkaline salts were rapidly utilized during all febrile processes, and that their absence could become, as in pneumonia, the predominating cause of death. This, in turn, suggests that we should not only use the normal salt solution as an excipient for the formaldehyde, but *resort to hypodermoclysis from the start, and repeatedly.*

As is well known, the use of salt solution alone has brought about recoveries. Indeed, in some cases, as shown by Claisse and Bosc (*Révue de Chirurgie*, vol. 1895), marked improvement occurs while the injection is being made. In Dr. Barrows's case, however, the beneficial action should be ascribed to the formaldehyde, since distilled water was used as excipient.

Need we, however, consider formaldehyde as the only agent capable of sufficiently stimulating the adrenal system to overcome the morbid process? By no means. Baccelli saves practically all his cases of tetanus by the use of subcutaneous injections of a 2-per-cent. solution of carbolic acid. (See results of Baccelli's treatment on page 73 of this issue.) Any sufficiently active adrenal stimulant will act in the same manner, we are convinced, provided, however, chloral, the bromides, cannabis Indica, and other sedatives or depressomotors, *i.e.*, adrenal depressants, be strictly omitted from the treatment. The convulsions of tetanus and puerperal eclampsia do not differ as to their pathogenesis, as we interpret them. Though each disease may be due to a specific toxin, both toxins act in the same manner upon the adrenal center: *i.e.*, they depress its functional activity. As the adrenal system governs all oxidation processes, waste-products are not oxidized or destroyed by the blood's autoprotective agencies (trypsin particularly), and their accumulation in the blood-stream is the exciting factor of the convulsions.

C. E. DE M. SAJOUS.

Cyclopædia of Current literature.

ABDOMINAL RIGIDITY, DIAGNOSTIC VALUE OF.

Abdominal rigidity is a constant symptom in all irritations and inflammations of the peritoneum, and is, therefore, a valuable sign in the diagnosis of the presence of foreign materials in the peritoneal cavity, even before inflammation has ensued.

It is a fairly accurate index to the severity and extent of a peritoneal implication, and is, therefore, valuable in observing the course and estimating the severity of a peritonitis. It is a more reliable sign than pain or tenderness in the diagnosis of perforation occurring in typhoid fever.

On the other hand, we must remember that the determination of rigidity in the upper part of the abdomen is not always easy, and that it may be present in inflammations of the pleura, the peritoneum being normal. J. A. Blake (New York Medical Journal, Jan. 3, 1903).

ANÆSTHESIA, BAD SUBJECTS FOR.

The "bad subjects" are arranged under six heads: Patients whose health is good—possibly exceedingly good—who have some physical peculiarity rendering them more or less liable to intercurrent embarrassment or arrest of breathing. Patients whose respiratory tract is in some way encroached on or whose respiration is in some way hampered by pathological or other conditions. Patients suffering from certain grave visceral or constitutional affections. The highly nervous or excitable patients; those suffering from various nervous affections, and those given to the excessive use of morphine, alcohol, or other drugs. Patients having the characteristics of two or more of the

foregoing classes. Patients who prove to be difficult or bad subjects without any discoverable cause. F. W. Hewitt (Lancet, Jan. 10, 1903).

ASPHYXIA, TREATMENT BY HYPODERMOCLYSIS AND H_2O_2 .

The advantages of this method of treatment over endovenous injections of oxygen are set forth by the writer, who holds that the latter are not devoid of the danger of producing gaseous emboli, while the special apparatus necessary makes their administration inapplicable in the majority of cases. He believes that the danger attributed to H_2O_2 from its oxidizing action in the presence of acids and from its reducing power in the presence of alkalies is much exaggerated. Phenard demonstrated its presence in the air and water; Wurster found it in saliva, milk, perspiration, and wherever the vitality of the protoplasm was greatest. Schönbein states that H_2O_2 is not only formed in the organism, but has an important function in the processes of oxidation. And if it is true, as has been stated, that the decomposition of this substance when brought in contact with living protoplasm or in the blood-vessels produces symptoms of poisoning, with dyspnoea and asphyxia, such effects are obviated through its hypodermic administration, either because it decomposes more slowly, or decomposition does not take place and its excess of oxygen is utilized by the methemoglobinuric blood of the venous radicles. That venous blood does reduce peroxide *in vitro* has been demonstrated through the arterial color produced by its addition to such blood. Its power to overcome asphyxia has been proven by the author through

its injection into animals experimentally asphyxiated, those so treated recovering after repeated hypodermoclysis with H_2O_2 , at intervals of five minutes, 50 cubic centimeters being used in all. Asphyxiated animals who did not receive the injections succumbed within a short time. G. Campanella (*Medical News*; from *Gazzetta degli Ospedali*, Nov. 23, 1902).

BLOOD-PRESSURE, MEANS OF CONTROLLING.

Uniform mechanical pressure on the limbs and trunk by means of a pneumatic rubber suit gives a definite control of the blood-pressure of from 25 to 40 millimeters. There are no unfavorable side-effects. By this means patients may be placed in any posture during operations, because the pneumatic pressure creates an artificial peripheral resistance, causing the blood to flow back to the heart regardless of the posture of the patient.

Adrenalin chloride acts on the heart and the blood-vessels, but not on the vasomotor center. In the normal animal, in every degree of depression, when the cervical spinal cord has been severed, or the medulla destroyed, or the animal decapitated, adrenalin gave a definite control within certain limits over the blood-pressure, raising it even twice as high as the normal. It must be used carefully and in great dilution with saline solution. It was usually used in 1 to 50,000. In large doses it may overstimulate the inhibitory mechanism in the heart. This may be prevented by atropine. A decapitated animal was kept alive for ten and one-half hours by adrenalin and artificial respiration. The effect of adrenalin on the heart and blood-vessels may be obtained after death. Most animals could within cer-

tain limits be brought back to life again. In one experiment, fifteen minutes after a dog's heart and respiration had entirely ceased adrenalin, in 1 to 50,000 solution, was introduced into the jugular vein, artificial respiration was given, and rhythmical pressure was made on the thorax over the heart. Normal respiration and blood-pressure were re-established.

A remarkable effect on a patient was obtained by a combination of the pneumatic rubber pressure-suit and adrenalin. The research extended over three years, and is based on observations on more than two hundred animals and many clinical cases. G. W. Crile (*Journal of the American Medical Association*, Jan. 24, 1903).

CROUPOUS PNEUMONIA, HERPES IN.

Herpes zoster is a pathological condition,—like pneumonia, for instance,—with definite lesions of certain sensory ganglia, sensory nerves, and the skin, capable of being excited by a variety of causes. It is probable that the primary ganglionic lesions are commonly due directly or indirectly to the soluble toxins of various micro-organisms. The skin-lesions may be on the head, neck, trunk, or extremities, corresponding to the Gasserian and posterior root ganglia affected.

Various forms can be distinguished. (a) Spontaneous or primary herpes: thought by Head and Carpenter, and others, to be a specific infectious disease, the specific causal agent of which has a special affinity for certain sensory ganglia (posterior spinal and Gasserian). (b) Herpes occurring after certain definite toxic agents, as arsenic and carbonic oxide gas, etc. (c) Herpes occurring in the course of certain acute infectious diseases, as pneumonia, cerebro-spinal meningitis, and probably of malarial and ty-

phoid fevers. The lesions of the ganglia and of the skin in the above three forms are the same, and the processes, therefore, presumably identical. (*d*) Herpes simplex, so called, affecting the lips and nose in coryza, gastro-intestinal intoxications, etc., and genitals (herpes genitalis) has not been sufficiently investigated to be classified; no evidence exists for or against its connection with changes in the nervous system.

As far as changes in the skin in herpes are concerned, they are illustrations of particular forms of necrosis and inflammatory reaction, and, as in similar lesions in other organs, can probably be excited in a variety of ways.

Herpes should be classified according to its relation to changes in the nervous system, and to this end every possible opportunity should be embraced for extending our knowledge in this direction. W. T. Howard, Jr. (*American Journal of the Medical Sciences*, Feb., 1903).

DEATH, SIGNS OF APPROACHING, IN CHILDREN.

The writer enumerates what he deems relatively sure signs of approaching death in children as noted by him during ten weeks' service on the Boston Floating Hospital. One was the appearance of brown vomitus which did not contain blood or react to the hæmin test. Another was the appearance of purpuric spots or streaks on the abdomen. In one case these very largely disappeared after the administration of a solution of gelatin, but the baby died. A third fatal sign is a drop of the temperature to 95° F. or thereabouts. There was no great difficulty in getting the temperature back to normal, but the babies died none the less surely. R. W. Hastings (*Boston Medical and Surgical Journal*, Jan. 15, 1903).

[*Commentary*.—In the January issue of this journal (page 3) we laid stress upon the relationship between the functions of the adrenal system and the composition of hæmoglobin in the following lines: "The secretion of the adrenals was traced as far as the pulmonary alveoli, but not beyond. Here it was found to hold in combination the various constituents of hæmoglobin, and to endow both the latter and their plasma with their affinity for oxygen. Prevailing views as to the chemistry of respiration were thus radically transformed, and our knowledge of the manner in which the blood-pigments were held together, likewise. We likewise ascertained that methæmoglobin (hæmatin) and hæmatoporphyrin (hæmatoïdin) were the component bodies of hæmoglobin thus held in association, and that hæmoglobinuria, methæmoglobinuria, and hæmatoporphyrinuria indicated successive stages of hæmoglobin dissociation incident upon adrenal insufficiency." The relationship between the signs noted by Dr. Hastings, the brown vomitus, the purpuric spots, and the hypothermia, on the one hand, and the adrenal insufficiency preceding death, on the other, is self-evident.—S.]

ENLARGED LIVER AND SPLEEN WITH JAUNDICE, FAMILY GROUP OF CASES OF.

In this series of cases the chief characteristics recorded by the author are as follows: Three members of a family are affected, and have been for at least seven years. There is persistent slight jaundice, but febrile attacks occur, during which the jaundice is usually intensified; there is vomiting, but bile is not found in the urine. During these attacks the liver is increased in size, and is tender, and also perhaps the spleen enlarged, but is never tender. The liver regains

its natural size between the attacks, but the spleen increases in size progressively, not receding, but sometimes apparently enlarging between the attacks. There are long intervals, sometimes over two and a half years, between the attacks. There is occasionally great anæmia and leucocytosis. In two of the patients there were attacks of articular rheumatism, and in the third attacks of pleurisy with effusion, pericarditis, and great heart-weakness, but without affection of joints. A sluggish ulcer occurred in one of the patients. J. A. Arkwright (Edinburgh Medical Journal, Jan., 1903).

GASTRIC ULCER, DIAGNOSIS OF.

The writer calls attention to two points in the differential diagnosis of gastric ulcer which merit special emphasis. Cancer at about 30 is by no means rare. Conversely, he sees every year several patients of middle or advanced life who have presented what their former attendants considered malignant cachexia, along with most of the other subjective symptoms, usually recorded as more or less diagnostic of cancer, and who still recover and remain well for a length of time incompatible with the supposition of cancer. He recalls a case of what was diagnosed by exclusion as varicose ulcer, catarrh, and dilatation, but in which operation was urged because the chances seemed to be nine out of ten in favor of cancer. This patient was alive two years later, and may be yet, though probably the hepatic sclerosis has killed him by this time.

Unfortunately, the rule does not work both ways. We are able to say that our probable diagnosis of cancer is disproved after two years of life, but we can never say when cancer may have developed or may develop in the future, since gastric catarrh, ulceration, etc., predispose to

malignant degeneration. A patient was cured of gastric dilatation, but two years later had a recurrence of digestive disturbances, with renewed dilatation; and this time there was pyloric cancer. Thus, the well-known law of logic, of the determination of an adequate cause, to the exclusion of other possible causes, does not apply to cancer. A. L. Benedict (Medicine, Jan., 1903).

GASTRITIS AND GASTRIC MOTOR INSUFFICIENCY IN CHILDREN.

The author recognizes the following classes of this condition: Simple chronic gastritis, motor insufficiency of the stomach, and a combination of both. Lavage is given an important place in the treatment. As to diet, too rigid a restriction is condemned, and proper cooking, slow eating, thorough mastication, and the removal or correction of dental defects are considered as important etiological factors. Medication is given a secondary importance. E. L. Wachenheim (New York Medical Journal, Jan. 24, 1903).

HÆMORRHAGES, SPONTANEOUS.

In a timely article upon this subject the writer concludes that subcutaneous injections of sterilized gelatin solution are capable of producing toxic symptoms in children, and recalls that the gelatin is manufactured from the bones of animals. The decomposition which takes place in these bones giving rise to cadaveric poisons, the resulting gelatin is a complex chemical substance the exact nature of which is unknown to experts. While it is undoubtedly allied to proteid substances, nevertheless it is not distinctly proteid. Its nutritive value and the changes which it undergoes during digestion have not been determined chemically. The nature of the toxic substances that produced the elevation of

temperature, the general condition of prostration, and collapse in his cases to which he refers, suggest that ptomains were the active agents. These may be contained in solutions which are subjected to high degrees of heat, the latter not altering their chemical nature nor their toxic properties. The gelatin of commerce is usually acid in reaction, and this acidity is said to be due to bleaching agents employed, either sulphurous acid or chlorin. The acidity of the gelatin seemed to exert no influence, for, in the gelatin neutralized by the addition of alkali, reactions occurred in the same manner.

The writer found that large doses of a 5-per-cent. solution of gelatin caused the death of rabbits.

He summarizes as follows:—

1. Sterilized gelatin injected subcutaneously contains toxic products.

2. These products are probably ptomains.

3. No further proof is needed that gelatin causes more rapid coagulation of the blood when it is exposed to the air.

4. It would be difficult to state what a safe dose of gelatin should be, given subcutaneously to a newborn infant.

5. The local use of gelatin and the use of gelatin by the mouth are warmly recommended, and no objection can be urged against their use. I. A. Abt (*Journal of the American Medical Association*, Jan. 31, 1903).

HAY FEVER. TREATMENT OF.

The treatment of hay fever is considered by the author under two heads: prevention and palliation.

By preventive procedures he contends from 60 to 80 per cent. will be rendered immune: by the palliative almost complete relief will be gained by the great majority, comparative comfort by the

minority. In nearly all of the remaining 20 to 40 per cent. of those subjected to prophylactic treatment striking amelioration will result, with fair prospect of complete freedom the succeeding season. Even after the attack has well begun a practical cure can be effected in many during the first few days of treatment. By a "practical" cure he means the possibility of withholding all local sedative applications without relapse.

The preventive treatment must be both local and constitutional; the one to be undertaken in the fall immediately upon the cessation of the annual attack, the other to be inaugurated some four to eight weeks in advance of the day upon which an attack is expected.

As to the local treatment, he quotes Bosworth: "Correct all abnormalities; if none exist, cauterize lightly the mucosa of those areas which are known to be particularly susceptible," and states that in nearly all cases of hay fever some departure from the normal is found, usually in the form of an obstructive lesion.

If none is present, he cauterizes lightly with galvanocautery the mucosa of both turbinates. Although he recognizes that this wide-spread cauterization has been condemned, he has never seen other than good results.

Even when the nose appears normal it is frequently possible, after careful search, to locate areas of hypersensitivity, and cauterization of these spots will then suffice.

The constitutional treatment is begun at least four weeks before an expected attack, and is given with three objects in view:—

1. An increase in elimination and decrease in production of uric acid.
2. The correction of any existing neurosis.

3. The removal of constitutional or local abnormalities.

An excess of uric acid acts in two ways: first, by being directly accountable for the manifestations of the disease through its local irritant action upon the nasal mucosa, and, secondly, by being one of the most potent factors in the causation of various neuroses. For this condition he administers for several weeks large doses of alkalthia or sodium salicylate, at the same time prohibiting all foods which form uric acid in excess, namely: meats (except in moderate quantities), carbohydrates, spices and condiments, tea, coffee, and cocoa, alcohol, cheese, and certain vegetables, such as potatoes, cabbage, onions, and celery.

A fair degree of exercise must be taken and water drunk in moderate quantities (from 1 to 2 liters daily).

After further details upon remedial measures, the writer considers their rationale and recognizes the three factors already referred to:—

1. A neurosis.
2. Some lesion or hypersensitive condition of the nasal membranes.
3. The inhalation of pollen or certain odors.

He then adds: "That some derangement of the nervous system renders certain individuals susceptible to the action of pollen or other irritants is evident, both from the history of the individual and from the clinical picture presented. In corroboration of this statement, we have the following facts:—

"1. To a certain degree the disease is hereditary, several members of the same family frequently being affected.

"2. The prevailing family tendency is in the direction of nervous affections.

"3. In the great majority of cases the patient is himself of a nervous temperament.

"4. Periodicity of attacks. They usually recur at the same time each year, and last the same number of days each season without respect to the varying climatic conditions of the different years.

"5. Extreme nervousness preceding attacks and exacerbations.

"6. Influence of suggestion and anticipation. This is shown by the periodicity of attacks and the influence of sudden emotions either in originating or preventing attacks. Mackenzie reports a case in which an attack of rose cold was precipitated by smelling an artificial rose, and one that came from looking at a picture of a hay field. The writer has a patient whose attack never begins until she has seen another sufferer, and whose symptoms are always aggravated by hearing another patient sneeze.

"7. It is a so-called 'aristocratic' disease; that is, it occurs chiefly in that class most subject to various neuroses, a small minority only coming from the lower walks of life.

"That some neurosis is a potent factor is evident, and that the uric-acid diathesis is largely accountable is generally accepted." L. B. Lockard (Boston Medical and Surgical Journal, Jan. 15, 1903).

HYPOCHLORHYDRIC DYSPEPSIA.

The treatment of this condition is thus outlined: For the immediate relief of symptoms, a tablespoonful, at the beginning of each meal, of the following: Distilled water, 300 grammes; hydrochloric acid, 4 grammes. To stimulate secretion of hydrochloric acid and pepsin, a bitter, preferably quinine, as, bromohydrate of quinine, 1 grain; syrup of bitter orange-peel, 150 grains. A teaspoonful in hot water a half-hour before meals. For the stimulation of the musculature of the stomach, a pill containing powdered ipecac and nux vomica, of each, 0.02, to be

taken a half-hour before eating. This has almost invariably given excellent results in the author's hands. As an anti-fermentative sulphur acts well and assists in overcoming the constipation which usually accompanies this condition. This is administered in a cachet containing washed sulphur and magnesia, of each, 0.50, two being given daily, one an hour or two after meals. If treatment of constipation be necessary, full, warm irrigation of the bowel every night is preferred, as it has been found that a mucomembranous enterocolitis is common in this condition. If there be much distension of the stomach, massage is to be practiced. This the patient may himself perform by crossing the hands over the abdomen and pressing the stomach upward under the false ribs; this is believed to assist the restoration of vitality to the musculature. O. Lemoine (*Medical News*; from *Nord Médical*, Dec. 1, 1902).

HYPODERMOCLYSIS AS A MEANS OF REINFORCING THE EFFECTS OF CALMATIVE REMEDIES IN MENTAL DISEASES.

The writer states that the calmative action of certain remedies (duboisine, hyoscine, bromides, etc.) is augmented when these drugs are administered hypodermically, dissolved in 400 cubic centimeters of physiological salt solution, for this kind of internal lavement seems to disembarass the organism of the intoxication. By this method one obtains the same effects with only 4 decimilligrammes of duboisine sulphate and 3 decimilligrammes of hyoscine hydrate as are obtainable with twice that dose of the drugs given without the serum. A gramme of sodium bromide introduced in this way will suffice to induce a sensible and lasting sedative effect. Gas-

pero (*New York Medical Journal*; from *Therapie der Gegenwart*, Sept., 1902).

HYSTERECTOMY.

The writer presents the results in fifty cases of abdominal hysterectomy for fibroid disease of the uterus, and concludes that the decision as to operation must depend on the danger to life and the amount of disablement, ill health, and suffering which are caused by the disease. The social condition of the patient is also a factor to be considered, and since a comfortable invalid life is incompatible with poor circumstances we are not justified in withholding from poor patients the restoration to working capacity which the operation of hysterectomy, if successful, confers. In patients in a better social condition the very serious moral, mental, and physical effects of long-continued invalid life are not sufficiently appreciated by medical men. In nearly all cases in which the disease causes disablement, or where the hemorrhage, pain, and pressure are sufficiently severe to threaten ultimate serious damage to the general health, to the nervous system, or to the pelvic viscera, the possibility of cure by operation should be laid before the patient, and if the conditions are favorable the operation should be advised.

The operation of abdominal cervical hysterectomy as now carried out has a lower mortality in capable hands than is sometimes represented (4 per cent.) and is comparable with that of ovariectomy. The uterus can be safely amputated at any level, and the absence of recurrence of fibroid disease in the stump or cervical portion of the uterus—in any case in the present series—is an argument in favor of cervical amputation as against pan-hysterectomy. In the former case, also, the pelvic floor is left intact.

Myomectomy, the enucleation of one or more fibroid tumors with the preservation of the uterus as a whole, is a conservative operation of much value, and should be practiced in the case of single and accessible tumors.

In all cases, where possible, one or both ovaries should be left in the operation of hysterectomy for fibroid disease. The beneficial effect of this procedure is shown in the more complete convalescence and the modified character of the artificial menopause. C. J. Bond (*Lancet*, Jan. 17, 1903).

INEBRIETY, TREATMENT.

The strong claims made for the efficacy of a certain remedy for drunkenness led the writer to determine what it contained. Some of these remedies, as is well known, are merely alcoholic preparations, others contain tartar emetic. The remedy in question sells at one dollar per box, containing twelve powders, weighing about 9 grains. The powder gave no evidence of any of the ingredients expected. On being heated in a platinum crucible, it charred, emitted an odor of burnt sugar, and finally burned away, leaving but a trace of ash. No antimony nor mercury compound was present. Ammonium chloride was detected. There was no alkaloid nor alkaloidal salt. The only materials that could be found were milk-sugar and ammonium chloride. Henry Leffmann, Laboratory of the Philadelphia Medical Journal (*Philadelphia Medical Journal*, Jan. 24, 1903).

INFECTION. ROUTE OF.

The usual route of infectious micro-organisms from the digestive tract is through the blood-stream. During the heat of digestion it is not an unusual thing for micro-organisms to find their

way into the portal circulation. Adami and others have shown that micro-organisms fed to animals may be demonstrated in the liver circulation. At times infection seems to take place from the digestive tract. This is not as common as used to be thought. It is probable that presence of irritative conditions of various kinds, congestion, or interference with the flow of bile by enlarged lymph-glands may predispose to conditions in the duodenum which cause reflux of intestinal contents into the bile-ducts, and hence set up infectious processes in the gall-bladder. It must be remembered that even dead bacteria are not inert bodies, but may possess in themselves certain chemical substances that will cause chemical changes in the bile. A. J. Lartigau (*Med. News*, Jan. 31, 1903).

INSANITY AMONG OUR SOLDIERS IN THE PHILIPPINES.

The popular impression of the prevalence and unfavorable character of insanity among the soldiers of the Philippine Army has been greatly exaggerated. Considering the character of the service and the climatic conditions, the percentage is very low and the character of the disease is, in nearly all cases, quite favorable. But one of the three hundred and nineteen cases was diagnosed as paresis, and, excluding cases of hereditary tendency or congenital defect, the number tending to dementia is by far smaller than among any other class the writer has had in his care during twenty-six years. A. B. Richardson (*Philadelphia Medical Journal*, Jan. 31, 1903).

INTESTINAL OBSTRUCTION, EXPLORATORY OPERATIONS IN.

When, in a doubtful case, it is decided to open the abdomen in order to seek for a supposed mechanical obstruction, the

writer recommends the following procedures:—

“Open in the middle line below the umbilicus, because most of the causes of obstruction will be found in the lower half of the abdomen. Without allowing any intestine to escape examine first with two or more fingers, or even the whole hand, the right iliac region, and pass from there toward the umbilicus to feel whether there are any adhesions there. It is in this right lower half of the abdomen that most of the causes of obstruction are to be found, for here are (1) the appendix; (2) intestinal diverticula, perhaps attached to the umbilicus or to the neighboring mesentery; (3) the commonest site for volvulus,—that is, the cæcum; (4) the usual site for the lodgment of an impacted gall-stone,—that is, the lower part of the ileum; (5) a common place for adhesions due to caseous mesenteric glands; (6) the sites of inguinal, femoral, and obturator hernia. Further, if the obstruction be in the small intestine, it is in the right iliac fossa that undistended intestine will be found, and if this can be secured and traced upward it is the surest guide to the seat of obstruction.

“Examine next the left iliac region and the pelvic region, the latter especially if the patient be a woman, for there, as additional causes of adhesions, may be inflamed ovaries or tubes or some uterine trouble with neighboring inflammation.

“If no cause can be discovered, then either open a coil of distended intestine and suture it to the skin, if the patient be too ill to bear more, or else decide to take the distended bowel out of the abdomen altogether, and, if necessary, open it, empty it, and suture it. It is only by so doing that you will be able to return it once you have decided to let it escape, and it is often only by so do-

ing that you will find a deeply-seated obstruction.”

These rules were elaborated for the writer's own guidance, and he has found that it is of great assistance to have some definite plan on which to proceed. If one has been able to eliminate the various conditions that simulate intestinal obstruction, it is evident that the next step is to have some clear idea as to how best to proceed in dealing with any mechanical obstruction itself. Anthony Bowlby (British Medical Journal, Jan. 3, 1903).

INTESTINAL SUTURE, THROUGH-AND-THROUGH.

The suture that aims to include but a portion of the bowel-wall is dangerous, because (*a*) it is liable to fail to include any of the submucosa, in consequence leaving a weak stitch; (*b*) if including any of the submucosa it is almost certain to penetrate the coat, leaving a stitch open to the dangers of capillarity. By utilizing a through-and-through suture the danger of yielding is excluded. By employing a suture that is knotted in the lumen the danger of capillarity is diminished. It is acknowledged that the most appropriate place for the knot when all coats are perforated is in the lumen of the bowel. When the submucosa has been perforated accidentally the knot ought to be placed inside. Many so-called Lembert stitches perforate the submucous coat and thus convert an intentional non-perforating into an unintentional perforating suture. Owing to the extreme tenuity of the submucous coat (one-sixth of the thickness of the needle which is to “penetrate, but not perforate” it), we are utterly unable to differentiate between a perforating and non-perforating Lembert stitch. The logical conclusion is that the ideal loca-

tion for the last and all knots in an enterorrhaphy is outside of the peritoneal cavity, in the lumen of the bowel. As a chain is no stronger than its weakest link, it is of practical import that the last one or two stitches be also perforating and knotted in the lumen. The diaphragm by its valve-like action is of great value in the prevention of leakage. The side-knot, or "square" stitch, in rendering a retaining suture unnecessary, is superior to the top-knot, or "circular" stitch. F. G. Connell (*American Medicine*, Jan. 24, 1903).

JOINT TUBERCULOSIS, THE MALIGNANCY OF.

Tuberculous disease tends to recur after apparent cure in a considerable proportion of cases. This recurrence is most commonly a local one. Metastases are not common. Trauma, direct or indirect, is frequently associated with the recurrence. Indirect trauma is probably the exciting cause of the recurrences, especially where partial ankylosis or deformity exists. Patients who have suffered from bone and joint tuberculosis should be cautioned that they are not well when symptoms have ceased and that reasonable care must be exercised to avoid recrudescences. Deformity and shortening should be corrected as far and as accurately as possible to lessen the chance of recrudescence.

Mechanical treatment, especially fixation, should be used in the acute conditions in childhood. Exploratory interference, where discretion is used, with a view to removal of isolated foci, is advisable in many cases in children, and is to be urged in the majority of the recrudescences, if seen early. Recognition of the fact that patients with hip disease, Pott's disease, and tumor albus have tuberculosis just as much as if they had

phthisis, and should be treated accordingly, must be insisted upon. C. F. Painter (*Boston Medical and Surgical Journal*, Jan. 8, 1903).

LEUCOCYTOSIS IN SUPPURATION.

A careful count of the leucocytes in the blood of forty cases in which suppuration had developed from one cause or another led the writer to conclude that leucocytosis should be considered as an early and valuable diagnostic sign of suppuration, especially when the latter was located in some abdominal organ. Leucocytosis was found by him to persist as long as the suppurative process tended to spread, and continued some time after evacuation of the pus-cavity, though this procedure was ultimately followed in all instances by a steady decline. It did not appear in all cases of suppuration, however, a feature which the author ascribes to excessive reaction on the part of the organism or death before leucocytosis has had time to develop. Blassberg (*Wiener klinische Wochenschrift*, Nov. 20, 1902).

[*Commentary.* — Blassberg's observations are of considerable value to us in that they lead to conclusions coinciding, as to their general terms, with our own in respect to the significance of leucocytosis in typhoid fever. The prevailing view, as is well known, is that leucocytosis points to perforation. Our own researches, however, have suggested the following remark ("The Internal Secretions and the Principles of Medicine," page 624): "Leucocytosis is not a direct sign of impending perforation, but a means of gauging the likelihood of perforation through the intensity of the ulcerative process as reflected in the toxæmia. An excess of from 3000 to 10,000, therefore, points to a correspond-

ing active ulceration, which may at any moment bring on this complication, though the pulse show no unusual rise. Yet the leucocyte-count may reach 14,500, as stated by Cabot, and even far beyond, and perforation fail to occur." Again, perforation may occur and fail to have been preceded by a leucocytosis, owing to insufficiency of the adrenal system, the underlying primary factor of the leucocytogenic process.—S.]

LITHIUM, EXPERIMENTAL STUDY OF.

Lithium is excreted in the saliva, into the stomach and bowel, and in the urine. The greater amount is excreted in the urine, though more appears in the stomach and bowel when nausea, vomiting, and diarrhoea have been profuse. It can usually be demonstrated in the secretions within ten minutes after a hypodermic injection, though its excretion proceeds slowly, for the writer has found it in secretions twenty-three days after the injections were stopped.

Lithium salts given to animals, hypodermically or by the stomach, cause, sooner or later, fatal gastro-enteritis. This gastro-enteritis is, undoubtedly, connected with the excretion of the metal through the bowel-wall. These salts do not possess any diuretic action that cannot be accounted for by their salt action. They render the urine alkaline, and thus act like the other alkalis. Lithium carbonate, in 15- to 20-grain doses, and lithia tablets have been known to cause gastro-intestinal symptoms in man. Dilute solutions of lithium salts are not solvents for uric acid or urates. Clarence A. Good (*American Journal of the Medical Sciences*, Feb., 1903).

LUNG SURGERY.

Severing one or more of the larger pulmonary blood-vessels results in in-

stant death. If death does not result within a few minutes, bleeding will be slow and gradual. If bleeding is slow and gradual, it may require hours or days to cause fatal exhaustion. If death does not occur until after the end of the second day following severe bleeding, infection proves lethal. All or a part of the escaped blood may pass through the opening in the chest into the bronchus or alimentary tract. The blood may escape into the pleural cavity or cavities, pericardial or peritoneal cavity, or all, and thereby become concealed. Hæmorrhage, when due to pulmonary tuberculosis, should not be allowed to become fatal without opening the bony chest, and the application of pressure by forceps, gauze, or otherwise. Bleeding of the lung from any cause will, in many cases, cease when the lung is allowed to contract upon itself, with an open chest. Blood-clots within the pleural cavity should be removed at the time they are discovered, whether infected or not. Blood-clots in the pleural cavity may become organized with or without adhesions of the parietal and visceral pleura, or they may become infected and cause more serious consequences.

Referring to pneumotomy, the author states that more definite knowledge of conditions and symptomatology is necessary that surgery of the lung may be perfected and made more aggressive in general.

Abnormalities, congenital or acquired, must always be considered in dealing surgically with the lungs. Atelectasis and apneumotosis should be cared for by relieving the compression by removing the cause. The same surgical principles can be applied to the lung as other organs of the living body.

The bony chest may be opened for exploration of the lung with as little dan-

ger as opening the abdomen, cranium, articulation capsule, kidney, liver, pancreas, spleen, stomach, gut, or hepatic duct. Hermetically closing the chest is irrational, unscientific, and dangerous. Closing the chest-wound by any means does not prevent the escape of blood from injured pulmonary vessels into the pleural cavity. All wounds of the chest-wall, whether penetrating or non-penetrating, should be treated aseptically, and with reference to drainage. No instrument or needle should be made to enter the lung-tissue for exploration, or the removal of fluid, unless the bony chest has previously been opened.

Foreign bodies in the bronchi or parenchyma of the lung may be detected with a fine exploratory needle through an open chest, with the lung contracted. Foreign bodies in the lung and bronchi, when causing serious symptoms, should be removed. Some small, foreign bodies become encysted and remain harmless. The position of a foreign body in the lung changes with expansion and contraction of the lung. B. M. Ricketts (Boston Medical and Surgical Journal, Jan. 29, 1903).

MILK BACTERIA.

The efforts being made to improve the milk-supply of our cities and to establish standards of its purity or wholesomeness have brought out considerable information as to the bacterial content of milk and raised interesting questions as to its significance. Most of the investigations along this line have dealt only with the number of bacteria found in a cubic centimeter of a given sample of milk, and such emphasis has been laid upon the numbers found that it seems not improbable that we have learned to attach undue importance to this particular phase of the matter. We have come to

believe that a low bacterial content indicates a wholesome milk, and that a high content belongs only to milk that is unwholesome or dangerous. Professor Conn, in the chapter of Chapin's "Theory and Practice of Infant-feeding" devoted to the bacteriology of milk makes it clear that such assumptions are not altogether warranted. It is not a new thing to us that bacteria are not all hostile or dangerous to men, but it takes an effort to accept the idea that even in milk some of them may be harmless or even beneficial. The bacteria commonly found in milk are of three varieties: 1. Those producing lactic-acid fermentation. 2. Those producing albuminoid decomposition. 3. Those having no noticeable action on milk. The great number of those ordinarily met with belong to the first class, and are probably not pathogenic to man. It is this class which under usual conditions multiplies rapidly in milk and is most largely responsible for the high counts made when the milk is twenty-four or forty-eight hours old. The lactic acid resulting from their growth checks the development of many other organisms in the milk, and even in the intestine of man seems to have a favorable action in a similar way. Furthermore the rapid increase in number of the lactic-acid bacteria tends to limit or check the growth of other varieties and in this way is not an unmixed evil.

The organisms of the second class are much rarer and fewer in number than the lactic-acid bacteria. While themselves non-pathogenic to man, they may by their growth in milk produce substances which are detrimental or even poisonous. Their growth is ordinarily checked by the action of lactic acid.

In the third class are grouped many varieties of organisms for the most part

harmless to man. Of pathogenic organisms, the tubercle, typhoid, and diphtheria bacilli have been demonstrated in milk. Certain varieties of streptococci are found in a large percentage of ordinary samples of milk, but the question of their relations to disease is not settled. The infective agent of scarlet fever can be carried in milk, but, as its identity is unknown, it cannot enter into consideration.

We have long attributed the acute diarrhoeas of children to the bacteria present in milk, but just which ones were the active agents we have not known. It may be that the discovery of the relation of the Shiga bacillus to some of these cases may lead to definite demonstration of the part played by the bacteria in milk.

The known pathogenic organisms are found in milk not infrequently, but as a rule in very small numbers. It appears, however, that it makes a great difference just which one of these pathogenic varieties gets entrance to milk, not alone by reason of their different actions in the human organism, but because one may increase and multiply in milk while another fails, or, it may even be, dies out. Milk is good ground for the typhoid bacillus, but stony soil for his brother, the tubercle producer.

A few typhoid bacilli finding entrance to milk soon after the milking may mean millions to the consumer, while, on the other hand, it may be that the few tubercle bacilli in the milk of a tuberculous cow may be largely deprived of their powers for harm by the time the milk is used. The latter proposition suggests a possible explanation of the relatively rare infection resulting from the use of the milk of tuberculous cows.

Excluding the possible use of chemicals or other methods of preservation,

the counting of the number of bacteria in the milk offered for consumption is of value in indicating, first, the care taken in the milking process to prevent contamination; secondly, the care to prevent contamination from outside sources after the milking; and, thirdly, the conditions under which the milk has been kept. If no care is taken in these respects, the milk will inevitably contain great numbers of bacteria. Proper care at the milking will limit the number of organisms to a few hundred to the cubic centimeter, but if such milk be allowed to stand at summer temperature, at the end of twenty-four hours the hundred will have grown to millions. If, on the other hand, the milk is promptly chilled and then kept at a temperature of 40° F., at the end of twenty-four hours the number of bacteria may actually be lower than at the milking-time. Carelessness at any step in handling of the milk, such as the use of infected cans or utensils, exposure to dust or dirt of any kind, uncleanness on the part of those engaged in the process, etc., will naturally result in increasing the bacterial content of the milk. It is in this stage of the process that contamination with the most important of the pathogenic organisms, the typhoid bacillus or diphtheritic bacillus, is most likely to occur. If such contamination has occurred, then the increase or decrease of these organisms will doubtless be determined, in largest part, by the temperature at which the milk is kept and the time that elapses before it is consumed.

A low bacterial count after natural milk has been kept twenty-four or forty-eight hours must therefore mean that care has been exercised in all the several particulars indicated above. A high count under such circumstances may

mean a break in any one, or two, or all of the links of the chain.

The most important questions from the standpoint of health, the presence, number, and varieties of pathogenic organisms, are not answered directly in either case. The problem would be somewhat simpler if all micro-organisms inoculated into milk behaved in the same way. We might then infer that the higher the bacterial count, the greater the number of pathogenic organisms, if any be present. This, as has already been suggested in speaking of the growth of non-pathogenic forms, is not at all the case.

The low count may, however, be taken as an assurance that due care has been exercised in every step of the business and, at present, constitutes the best practicable certificate of the purity and wholesomeness of the milk in question. The high count may or may not mean a harmful contamination of the milk. Incidentally it is interesting to note the difference of views between authorities as to what number of bacteria is permissible in a good milk. The Milk Commission of the Medical Society of the County of New York allows not more than 30,000 bacteria to the cubic centimeter; Hewlett in his recently published manual suggests 1,000,000 as a practicable figure!

The next step forward in this work must be the differentiation of the varieties of bacteria commonly met with in milk, especially with relation to the frequency and numbers in which pathogenic bacteria are found.

Considerable work has been done, especially in England by Kanthack, Sladen, Delépine, Hope, and others on the frequency with which tubercle bacilli may be found in the milk-supply of cities. In an examination of one hun-

dred samples of country milk E. Klein (Journal of Hygiene, 1901, i, page 79) found the tubercle bacillus seven times, pseudodiphtheria bacilli eight times, once the diphtheria bacillus, and once a pathogenic yeast.

This is work of the very greatest importance at the present time. The labor involved is great and the difficulties to be met seem insurmountable, but doubtless the importance which attaches to the subject inspire the enthusiasm necessary to further advance. We have long enough rested content with counting the colonies of bacteria found in our milk. We need to know the individuals in the colony, to learn exactly where they come from, what effects their presence has upon the milk itself, and what it portends to the consumer of the milk. Editorial (Archives of Pediatrics, Jan., 1903).

MORPHINE INTOXICATION, SERUM-TREATMENT OF.

The writer reviews experimental researches on 85 rabbits treated for three weeks to five months with small doses of morphine commencing with 0.015 gramme and increasing to 0.51, or a maximum of 1.2 grammes a day. The animals thus received a total of 4.59 to 63.61 grammes of morphine and the rabbit serum acquired protecting power against otherwise fatal doses of morphine, both for rabbits and 100 mice. After thorough tests of the immunization thus attained, the writer used the serum for the treatment of one acute and five chronic cases of morphine intoxication. Some of the patients had been in the habit for years of receiving a subcutaneous injection every day, and all previous attempts at suspension of the drug had induced severe symptoms. After one to three injections of the

serum, with abrupt suspension of the drug, no symptoms were observed. In the acute case a woman had taken 12.45 grammes of tincture of opium, and all the threatening symptoms rapidly passed away and the patient promptly recovered under the serum-treatment. L. Hirsch-laff (Journal of the American Medical Association; from Berliner klinische Wochenschrift, No. 50, 1902).

PANCREATITIS, ACUTE, AND NECROSIS OF FAT-TISSUE.

After reporting a case of acute pancreatitis and necrosis of fat-tissue, in which death followed nine days after laparotomy and drainage, the authors note the following salient features: The previous occurrence of two attacks, presumably due to gall-stones; the extension of the fat-necrosis toward the left adrenal and kidney, emphasizing the value of posterior drainage in such cases; the possible importance of the destruction of the adrenal in producing the fatal issue; and, finally, the negative results of bacteriological examination in extensive necrosis of the pancreas and fat-tissue. G. H. Monks and D. D. Scannell (Boston Medical and Surgical Journal, Jan. 22, 1903).

PELVIC OPERATIONS, MORTALITY IN.

The mortality following operations for suppurative diseases of the tubes and ovaries can be kept under 5 per cent. The death-rate is largely influenced by (a) the virulence of the specific organisms present; (b) the individual resistance of the patient; (c) the time and manner of carrying out the operative technic. The micro-organism most to be feared is the streptococcus pyogenes, but it must be borne in mind that this organism varies considerably in virulence. Abdominal drainage following opera-

tions for pus in the tubes and ovaries is seldom called for, as the organisms are generally dead. Drainage becomes necessary only when it has been found impossible to remove the suppurative structures, or where perforation of the bowel from the separation of dense adhesions is to be feared. Under these circumstances the best route is by the vagina. The employment of sterile salt solution for irrigating the pelvic cavity will satisfactorily remove the pus or its products, and the filling of the abdomen with salt solution will dilute and promote the rapid absorption of any inflammatory products that may be left behind. The elevated position for twenty-four hours following the operation, with the abdomen filled with salt solution, tends to prevent the intestines and omentum from coming in contact with the immediate field of operation, and as a result adhesions are not so likely to form between the viscera and the incised surfaces. Should symptoms of infection follow the closing of the wound in pus cases, we have, as a rule, sufficient time to reopen the abdomen and wash out the infective material that may have been left behind or that may have been introduced at the time of the operation. Operations for pus in the tubes and ovaries from the standpoint of the pus *per se* are not surrounded by more danger, as a rule, than those in which a purulent focus is not present. Hunter Robb (Journal of the American Medical Association, Jan. 17, 1903).

PERTUSSIS, DIAGNOSIS OF.

There seems to be good ground for the opinion that an increased percentage of lymphocytes, at least equaling or exceeding that of the polymorphonuclear neutrophilic cells, is a valuable diagnostic aid before the characteristic symptoms

of the disease make the diagnosis easy. But like the doctrine of polymorphonuclear leucocytosis in general, the figures are more convincing in the mass than when considered individually. Alfred Wanstall (*American Medicine*, Jan. 10, 1903).

PREGNANCY, THE MIMICRY OF.

Large tumors have been mistaken for pregnancy by competent observers. There are four classes in which error in the diagnosis of pregnancy in consequence of mimicry has occurred: (*a*) Those in which there has been a pregnancy and no tumor; (*b*) those in which pregnancy has been complicated by a tumor; (*c*) those in which there has been a tumor, but no pregnancy; (*d*) those in which there has been neither tumor nor pregnancy.

It is in cases of hard abdominal tumors with ascites that a mistake in diagnosis is most liable to take place. The following are the most misleading factors in cases which are liable to be mistaken, either for pregnancy or tumors: (1) The patient may be very fat, making it most difficult to palpate and percuss an abdominal enlargement with precision; (2) the vagina may present a more or less characteristic violet discoloration; (3) the cervix may be soft; (4) the breasts may be enlarged, painful, and may contain fluid; (5) there may be a cessation of menstruation, with more or less nausea; (6) the "linea nigra" may be well defined; (7) there may be a regular enlargement of the abdomen more or less closely corresponding to the calculated period of pregnancy; (8) the mass may closely resemble a foetus in the abdomen, presenting a head, body, and limbs; (9) the subjective sensation of movements may be prominent, and, to the patient, a factor decisive beyond argument as to

the existence of a pregnancy; (10) a perfect abdominal ballottement may be present.

A diagnosis can be made, however, by a thorough examination which pays close attention to all the important signs of pregnancy. First and foremost, the foetal heart-sounds are always absent, and the pulsation of a tumor may be mistaken for a foetus if the observer is careful to notice that they are synchronous with the radial pulse. This of itself is decisive. In the second place, even taking the list of mimicking signs given above, no one case presents all of them, and the omission of one or other of the usual important signs should put the observer at once on his guard. For example, it is a most suspicious fact when menstruation has continued through the supposed pregnancy. The author's experience is against this as being true. The presumption is strong against pregnancy when there is an unaltered hard cervix. Where the ascites seems to be present, a careful examination will make the diagnosis conclusive. Abdominal palpation and recto-vaginal examination under a brief gas anaesthesia will clear up the diagnosis and reveal the uterine tumors or the small uterine body with ovarian tumors. H. A. Kelly (*American Gynecology*, Nov., 1902).

RENAL INSUFFICIENCY.

By the term renal insufficiency is understood an incapacity of the kidneys to elaborate their peculiar excretion. Clinicians have long desired an accurate measure of this failure. If we had such means it would enable us to ward off the consequences of kidney disturbance better than is now done. Ever since the days of Bright the presence of albumin has been recognized as of striking significance in the diagnosis of kidney-

lesions. Until recently it has been customary to speak of the kidneys as healthy where no albumin was found in the urine. Later, cases were observed in which casts were present and but little or no albumin. This threw considerable doubt upon the value of albumin as an index of kidney disease, and, leading, as it did, to more careful study, it was found that very advanced kidney disease might be present, but with albumin so irregularly present, or in such small quantity, as to almost escape notice, and with casts so few in number that they could scarcely be recognized.

These uncertainties in the diagnosis of kidney disease led to a study of the entire twenty-four hours' urine for total solids and urea, a method which has furnished valuable data regarding the functional activity of the kidneys. It is accepted that diminished urea for a considerable period marks an incapacity of the kidneys for excretion. Unfortunately, the index is a valuable one, depending upon the amount of nitrogen taken with the food and that which is voided in various combinations other than urea. An increase in the so-called extractives will diminish the amount of urea just as will an elimination or marked restriction of nitrogen in the diet. Hence, to have the urea represent the excretory power of the kidneys, one must know approximately the amount of nitrogen ingested as well as that excreted in other combinations by the kidney. Notwithstanding these sources of error, an accurate measure of the urea for a considerable period is a fair index of renal sufficiency.

Even more valuable than the presence of albumin in the diagnosis of kidney diseases are the circulatory changes which accompany disorders of the kidney. These are high vascular tension, an

accentuation of the second sound of the heart often associated with non-valvular hypertrophy. Unfortunately, when kidney disease has advanced so far as to produce these secondary changes in the circulation, but little can be done to remedy the condition; the most that we can do is to keep the patient as comfortable as possible, and by hygienic and medicinal means favor elimination and so stay the progress of the disorder. We may in this way add to the length of life of the patient, and greatly increase his comfort, but a cure cannot be looked for.

These various considerations have led to the search for a more accurate test of renal sufficiency than we now have, especially since operations on the kidneys have become quite frequent. Among the records of the early nephrectomies are those in which a diseased kidney has been removed when it was the only one the patient had, or when the other was so far diseased as to be practically useless. This has led to devices for segregating the urine by catheterizing the ureters, or by placing a septum in the bladder so as to obtain the excretion from each kidney separately. There is the same difficulty in accurately estimating the sufficiency of each kidney that there is in estimating both of them, though the hourly excretion of urea furnishes a fair index of the capacity of the kidney.

Among the tests that have been devised for estimating the sufficiency of the kidney are methylene-blue, phloridzin, and cryoscopy.

Methylene-blue may be dismissed with brief mention. At first enthusiastically advocated as a diagnostic measure, it has practically fallen into disuse, as it tests only one function of the kidney, namely: its permeability. It is a test easily applied. The methylene-blue is given in

1- or 2-grain doses in capsule, and the time, intensity, and duration of the color of the urine are an index, not of the capacity, as was formerly supposed, of the kidney to elaborate and excrete nitrogenous substances, but simply of the permeability of the organ. Unquestionably in some diseased states this latter function may be very much lowered, but, on the other hand, there is advanced disease of the organs in which the permeability is not altered. Hence the value of methylene-blue as an index of kidney disease is comparatively slight.

In phloridzin we have a test which not only ascertains the permeability of the kidney, but also the capacity of the renal epithelium to separate sugar from this substance. When the test was first proposed it was believed that the sugar molecule was separated from phloridzin by the renal epithelium alone, but experiments have been made which go to show that in animals in which the kidneys have been removed sugar is found in the blood after the injection of phloridzin. Such an experiment is of doubtful importance, as the question is a purely clinical one, to be determined solely by the use of the test in persons with healthy and diseased kidneys. If in cases of diseased kidney the sugar which quickly appears in the urine after an injection of phloridzin is either not present or present in diminished quantity, then it is a fair index of the integrity of the kidney.

The test is easily made. A subcutaneous injection of from 5 to 10 milligrammes is given. Just previous to this time the bladder is emptied. Within one-half hour after its injection sugar should be found in the urine. The quantity of sugar should be greater in the first half-hour than in the second. If it is absent, or present in only small

quantity, or if the first half-hour's quantity is less or nearly the same as the second half-hour, it is strongly indicative of kidney disease. Though simple and easy of application, this test, while valuable, is not positive. Occasional cases of kidney disease seem to elaborate the sugar in nearly normal quantity, while in certain rare cases quite normal kidneys seem to have an incapacity to separate sugar from phloridzin. These exceptional cases are sufficiently frequent to give the test less value than it would otherwise have.

Cryoscopy has attracted a good deal of attention during the past two or three years, and may be destined to play an important rôle in diagnosis. As yet, the data are too few to estimate its value. Koranyi has done the most in this line, though Kummel has exhaustively studied more than two hundred and fifty cases. Cryoscopy depends upon the fact that a fluid containing the largest number of molecules has the lowest freezing-point. Most observers are agreed that there is a relation between the freezing-point of the blood and that of the kidney, which is of clinical importance. A comparatively high freezing-point for the urine and a low freezing-point for the blood indicates renal insufficiency, and as such contra-indicates operation. These observations have not been numerous enough to enable us to accurately estimate the position that cryoscopy may have in the diagnosis of kidney-lesions. Work along this line is being actively pursued, and it is possible that through this method a more accurate means of investigating the renal function may be attained. At present it is largely in the experimental stage.

Notwithstanding these newer proposals, it remains true that the accurate investigation of the kidney-function de-

pendes largely upon a careful estimate of the amount of urine for the twenty-four hours, together with its contained constituents. An examination of this kind carefully carried out furnishes the most valuable means of estimating the integrity of the kidneys. The other methods that we have mentioned may be useful to supplement such examination, and in doubtful cases may furnish additional data of value. The routine examination for albumin in the urine will continue to be the readiest means of investigating the condition of the kidneys by reason of the ease with which it is performed, and ordinarily it is sufficient in the absence of symptoms pointing to renal insufficiency. The value of these other methods is largely to be found in those cases in which there are symptoms of renal insufficiency without albumin or casts in the urine. Editorial (*Medicine*, Jan., 1903).

RENAL MOBILITY, INJURIOUS.

This eminently practical paper is based upon a personal experience in one hundred cases witnessed by the author.

One frequently sees patients who have undergone prolonged medicinal treatment or operative procedure for pain of supposed pelvic origin, but which on closer investigation, and in consequence of its persistence in spite of such measures, has proved to be due to an unduly movable kidney.

As to the frequency of movable kidney, the writer states that a large number of observers have supplied statistics on this point, with results so different as to cause confusion in the minds of anyone who endeavors to draw conclusions from them. Thus, Edebohl found 90 in 500 cases; Glénard, 1 in every 4 patients examined; Lindner, 1 in every 5; Senator, 1 in 171; Hilbert, 1 in 100; Einhorn,

74 in 343; while Madsen, whose contribution is recent, found 60 in 100 cases. Henry Morris, reviewing the subject, says that probably 7 to 10 per cent. of all women have abnormally movable kidneys.

The causes of such marked disagreement are ascribed to several factors: In the first place, much depends upon the nature of the clinic at which the cases are studied; those devoted to abdominal and pelvic disease naturally attract an undue proportion, while those devoted to other branches of the art probably yield an undue scarcity of such patients. Sec-

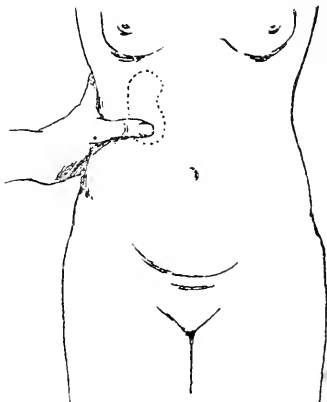


Fig. 1.—The first degree of renal mobility.

(W. F. Victor Bonney.)

(*Edinburgh Medical Journal*.)

ondly, much depends upon the persistence with which the patients are examined. The writer reiterates what has been already insisted on by Henry Morris, namely: the importance of repeated examination; he has frequently found an extreme degree of mobility at the second, third, or even fourth examination when those preceding it have been negative in their result. Moreover, he emphasizes the necessity of examining all patients in the standing posture, neglect to do this involving the likelihood of missing a large number of cases.

He advocates most strongly, as alone

giving reliable results, the method described by Glénard as *palpation néphro-leptique*. To carry this out the patient should first lie upon her back, and, if the abdominal muscles be rigid, both legs should be drawn up. Slight lateral flex-

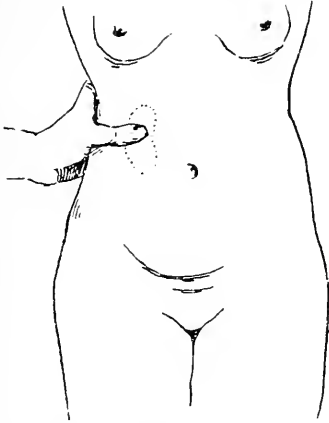


Fig. 2.—The second degree of renal mobility.
(W. F. Victor Bonney.)
(Edinburgh Medical Journal.)

ion toward the side to be examined gives a further laxity to the parts. The procedure is described as follows:—

In examining the right kidney the fingers of the left hand are placed over the twelfth rib behind, while the thumb gently grasps the anterior parietes immediately below the costal margin (see Fig. 4). The patient being told to breathe quietly, the loin is now gently compressed, until the thumb can feel the anterior surface of the quadratus lumborum, while internally its tip rests against the ridge formed by the spine and psoas muscle.

The patient is now told to take two or three deep, but quiet, inspirations, the compression of the loin being maintained. As the diaphragm descends, the lower end of the kidney will be felt to butt against the barrier formed by the approximated fingers and thumb. After two or three inspirations, during which

the examiner is appreciating and grasping the fact that it is the end of the kidney that he feels, the patient is told to take another, and, if possible, longer and deeper inspiration. As the kidney touches the hand, the examiner gently raises his thumb, still maintaining a partial pressure, when the organ will be felt to pass either wholly or partially within his grasp. At the very height of inspiration, the thumb, with a somewhat sweeping movement upward, sharply compresses the loin against the fingers behind, thus “nipping” the kidney. If the lower end of the organ be so nipped the kidney recedes upward under the shelter of the ribs, and cannot be arrested in the loin.

This is the first degree of renal mobility (see Fig. 1).

If it be caught exactly at its middle, it can be held so in the loin, a proceeding, however, usually accompanied by some little discomfort to the patient.

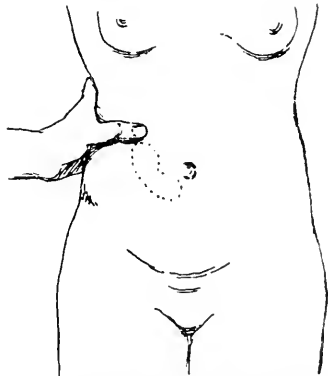


Fig. 3.—The third degree of renal mobility, with marked inward rotation. (W. F. Victor Bonney.)

(Edinburgh Medical Journal.)

This is the second degree of renal mobility (Figs. 2 and 5).

If, however, the upper end be grasped, the kidney is forced downward in a manner similar to that which obtains when a school-boy squeezes a cherry-stone from

between his fingers and thumb. The compression of the loin then prevents the expiratory return of the organ, and



Fig. 4.—Palpation *néphroplectique*. Grasping the loin. (W. F. Victor Bonney.)

(Edinburgh Medical Journal.)

the right hand, previously passive, is used to palpate it in its abnormal position.

This is the third degree of renal mobility (Figs. 3 and 6).

In the standing posture, which should always be adopted after the examination in the horizontal position, the patient should lean slightly forward and toward the side to be examined. The examiner, who sits on a chair in front and slightly to the side of his patient, should be careful to see (by palpation with the free hand) that the kidney is not already lying below the compressed loin, otherwise, he is liable to miss the more extreme degrees of abnormal mobility (Fig. 7).

Comparing this mode of palpation with the bimanual method of palpation, the writer contends that it has several marked advantages. First, it enables the kidney to be palpated throughout the latter half of inspiration and the greater half of expiration, while the bimanual

method consists in making brief plunges at the kidney at a moment corresponding to the beginning of expiration. Secondly, it leaves one hand free to palpate the kidney in its abnormal position, or it may be used to simultaneously examine the mobility of the opposite kidney. Thirdly, it is admirably suited for examination in the standing posture, in this respect having a great advantage over the bimanual method. And last, and perhaps most important of all, it furnishes a rough, but sufficiently accurate, measure for classifying the degrees of renal mobility.

When is a Kidney Unduly Movable.—Henry Morris considers that any kidney, whose mobility is such that its lower half can be grasped by the hands at the height of inspiration, is abnormal. Glénard says that all kidneys are unduly



Fig. 5.—Palpation *néphroplectique*. The kidney lies under the thumb of the left hand, the right hand steadies its lower end. There is no "inward rotation." (W. F. Victor Bonney.)

(Edinburgh Medical Journal.)

movable "the lower pole of which can be grasped between the fingers of the two hands on the patient taking a deep in-

spiration." Madsen is of opinion that every kidney, able to be felt bimanually in the horizontal position, is abnormal. Mansell Moullin lays great stress on the



Fig. 6.—Palpation néphroleptique. The kidney lies below the thumb of the left hand, the fingers of the right hand steady its lower end. The oblique lie of the long axis of the kidney consequent upon "internal rotation" is well shown. (W. F. Victor Bonney.)

(Edinburgh Medical Journal.)

failure of the kidney to return to its normal position after it has been displaced downward by forcible inspiration, the patient being in the standing posture. The writer states, however, that it is well known that undue mobility, by whatever standard it is estimated, is by no means constantly associated with symptoms. He therefore contends that a distinction must be made between kidneys merely *abnormally* movable and those *injuriously* so. The presence of symptoms is not simply an accidental circumstance dependent upon individual sensibility of the nervous system, but is directly determined by certain anatomical features, which may or may not characterize the displacement.

The symptomatology of injurious renal

mobility is summarized as follows: We have in cases of injuriously movable kidney, without marked localizing symptoms, a statement that the patient suffers from backache, often said to be worse at the periods, and this may be all that is complained of. There is often that degree of neuroses or hypersensibility which may mislead the practitioner into making light of her complaints, especially as a first examination may reveal nothing amiss. The patient is dosed with bromide of potassium, tonics, or purgatives, and later on, when these measures fail, pessaries may be resorted to, under the supposition that a slight degree of uterine prolapse is at the bottom of the trouble. If the patient has leucorrhœa, endometritis is promptly charged with the pain, and applications or curetting are advised; indeed, as pre-



Fig. 7.—Palpation néphroleptique. Examination in the standing posture. The case is one of third-degree mobility, with well-marked "inward rotation." (W. F. Victor Bonney.)

(Edinburgh Medical Journal.)

viously remarked by the author, more extensive operations than these are sometimes performed in error from this cause.

In examining any woman for the cause of alleged abdominal pain the practitioner should investigate very closely the condition of the kidneys, remembering that the finding of uterine displacements, or even inflammatory conditions in this region, does not, except in the clearly ascertained absence of other abnormalities, warrant us in instantly assigning all the blame to the pelvic organs.

Again, the extent of renal mobility cannot, as a rule, be safely gauged from the results of a single examination. The right kidney is easily felt in most persons, but the left with more difficulty, and therefore it is in cases of abnormal mobility of the left organ that mistakes most frequently arise. It should be understood that crises, hæmaturia, and violent gastric disturbances are not present in the majority of cases of injurious mobility, and diagnosis therefore rests on the presence of the typical backache, together with the detection, by frequent examination, of the physical signs of injurious displacement.

The author then refers to the more important points that guide us in determining our curative measures.

There are two main lines of treatment: palliative and operative.

As regards the palliative treatment, he contends that drugs are as useless in this condition as they would be to restrain a hernia or cure a varicocele. Patients are frequently dosed with bromides until a considerable degree of mental depression is effected, and a profuse acneiform eruption is developed, though how such a state of things can better an abnormal strain on the renal pedicle has always been a mystery. Purgatives have a certain slight value, since the pain of injurious mobility is certainly accentuated by constipation. Any mode of liv-

ing or feeding tending to reduce obesity is advantageous, since poverty in perirenal fat is probably the most potent causative factor.

The most valuable palliative agent at our disposal is a well-fitting belt. Belts have suffered much disparagement: a fact, however, not to be wondered at if one examines the ordinary type of apparatus supplied by instrument-makers. Many of these are useless, and some (particularly those with large, hard pads) worse than useless.

Further still, in order that a belt may yield good results, it is absolutely necessary to insure the intelligent co-operation of the patient herself. A patient must be educated to adjust her belt. The universal fault made by persons wearing belts is to put them on in the standing position. This is as irrational as to put a truss on to a hernia which is already down. Belts put on after the kidney has slipped down cannot be tightened, by reason of the painful pressure they make on the prolapsed kidney; and patients declare, in consequence, that they cannot wear a belt.

It is not, perhaps, so much the patient's fault as the fault of those advising the belts, who comparatively rarely lay stress on this important point. Still more frequently is it the fault of the maker, who contrives, by means of placing the fastenings at the back of the belt, to render it impossible to properly tighten it when lying on the back. The belt he advocates fastens in front by means of "busks" similar to those used in corsets. The sides are of strong, broad elastic, cut to the shape of the waist, and narrow from above downward in the midaxillary line, so as to compress the loins below the ribs. There is a lace at the back, but merely for purposes of preliminary adjustment, after which the

"bushes" in front are used to put on or take off the belt.

Last, an elastic band sloping from behind downward and forward, and fastening in front with a buckle, like that on a pair of elastic braces, completes the compression of the loin, imitating the position of the fingers and thumb in *palpation néphroleptique*. The patient should be instructed to take her daily bath the last thing at night, and to put on her belt before rising from the recumbent position in the morning.

She should be taught to accompany the fastening of the studs with a sustained expiratory movement, so as to reduce the kidneys at the moment of adjustment. With intelligent patients, unencumbered by a quantity of abdominal fat, very excellent results may be looked for in a considerable proportion of cases.

Finally as to nephropexy, the writer believes that it is indicated in all cases in which a belt fails to give relief; in all cases in which the severity of the symptoms makes relief urgent; in all cases in which hæmaturia or pain resembling renal colic makes it possible that there may be a calculus in the movable kidney, for this will be decided when it is exposed; and generally in all cases in which there is obvious enlargement of the organ. As a matter of fact, it is surprising how rare it is to find hydronephrosis of a movable kidney, considering how common abnormal mobility seems to be. Nephropexy gives, as a rule, excellent results, but absolute relief of all symptoms cannot be reasonably expected in every case, when one considers that it is just as abnormal for a kidney to be immovable as to be abnormally movable. The commonest operative error is to fix the kidney too low in the loin, with the result that the patient, who previously only suffered pain when the kidney was

down, now suffers more or less continual discomfort and tenderness. The kidney is also often fixed too far outward, with somewhat similar results. Nephropexy is unsatisfactory in neurotic patients, who often get a neuralgic condition of the scar, and more or less disturbed sensations may result from division or accidental ligature of the last dorsal nerve during the operation. W. F. Victor Bonney (*Edinburgh Medical Journal*, Dec., 1902).

SALINE SOLUTION, THE USE OF, IN CHILDREN.

In a synopsis of ten weeks' service on the Boston Floating Hospital the writer refers to the fact that, in addition to the use of stimulants in children that were very ill, normal salt solution under the skin—*i.e.*, hypodermoclysis—was found to be "of much value." He states that the sterile apparatus was always ready and warm, and was in daily, almost hourly, use. Every five or six hours, and in amounts varying from 1 ounce to 5 ounces, given under the skin of chest, back, or abdomen, was the rule. No harm resulted in any case, save two or three small abscesses, the cause for which was readily found in imperfect sterilization of the needle. It causes the baby little or no pain, and certainly seems to act as a powerful restorative. It can be readily given by a nurse, who must, however, give her entire attention to the matter.

Enteroclysis, or irrigation of the lower bowel, was performed nearly seven hundred times. It was much more commonly used in the early portion of the season. This seems to be due to a growing feeling on the part of the physicians that cases for this treatment should be carefully selected. There were no bad effects. Two quarts of solution were

commonly employed, with a pressure of eighteen inches, through a flexible rubber catheter, Nos. 21 to 23, American scale, inserted gently twelve or fourteen inches. The usual solution was normal salt solution, sterile water, or solution of soda bicarbonate from 3 drachms to the pint to 1 drachm to 2 pints. R. W. Hastings (Boston Medical and Surgical Journal, Jan. 15, 1903).

**SCARLET FEVER, MARMOREK'S SERUM
IN STREPTOCOCCIC INFECTIONS
COMPLICATING.**

Marmorek's serum should be employed in all cases of streptococcic pleurisies before performing the operation for empyema, which has hitherto been the universal treatment. In streptococcic angina the use of the serum is a rational measure, followed by immediate good results, and rendering the usual tedious and painful treatment by gargles, etc., unnecessary. In mixed infections, streptococcic and diphtherial, the serum of Marmorek may be employed simultaneously with the antidiphtherial serum. Federico Coco Perez (British Medical Journal; from Revista de Medicina y Cirugia Pract., Sept. 28, 1902).

**SEPTICÆMIA. SUBCUTANEOUS USE OF
FORMALIN IN.**

The recent announcement in this city of the successful use of a weak formalin solution injected subcutaneously in a case of severe puerperal sepsis, followed by reports of other cases not so successful, has attracted much attention both in the profession and out of it. We have known for some time that formaldehyde is an antiseptic of great power, and it has been used more or less successfully in a variety of conditions, but the consensus of opinion seems to have been that, while it is extremely active, it is too

irritating to be used in any degree of strength in contact with delicate tissues. The report from careful observers in this city that they had used considerable quantities of a 1 to 5000 solution subcutaneously or intravenously, with what seemed to them good result, and certainly without causing any immediately apparent damage to the blood, instantly gave rise to much interest in the profession and to some excitement in the daily press. However, the observers themselves will undoubtedly readily admit that one or two cases prove practically nothing, and those of us who have read the reports will be very loath to admit that any startling advance has been made. The first case reported was evidently in a very bad way from a uterine streptococcic infection, with a temperature of 108° F., and after the formalin injection there was a rapid fall in both temperature and pulse, followed by several performances of the same kind, a second injection of formalin meanwhile having been given. The argument of the observer was *post hoc propter hoc* as regards the injection, but it seems to us entirely too early to draw any justifiable conclusions in favor of the efficacy of the treatment, in spite of the fact that the bacteriological condition of the patient's blood improved rapidly. The violent extremes of temperature which this patient exhibited are not uncommon in severe cases of sepsis, and occur without treatment, or after the subcutaneous use of salt solution and other forms of treatment; and we must remember that the uterus in this patient had only very recently been cleared thoroughly of its septic contents when the formalin was used; so that any good effect from this intra-uterine treatment might also have been expected to manifest itself at about the time when the amelioration of symp-

toms began. The other cases reported are still too incomplete to discuss fairly, but we may note that in one an injection of only 100 cubic centimeters of a solution of formalin, made, by mistake, 1 to 2500 instead of 1 to 5000, caused very serious collapse with cyanosis, symptoms which we are constrained to consider due to a poisonous action upon the red blood-cells. If we are justified in this belief, the margin of safety is evidently very narrow and the need of extreme caution is very clear. Editorial (*Medical Record*, Jan. 31, 1903).

SERUM-THERAPY, CLINICAL RESULTS OF.

Diphtheria antitoxin is a specific, and its standing is assured. It is only in exceptional and exceedingly rare instances that failures are to be seen, and this may be the result of the operator even as of the remedy.

Marmorek's serum is erratic and not to be depended on. It may be harmless, as the originator asserts. Experience has also demonstrated this. If the method of its originator be followed in its application a favorable result or an unfavorable result may be equally expected.

In pneumonia the infection is mixed and failure results, not so much by reason of the remedy in the strepto-infection, but because the disease is complicated, and the complication requires an especial addition to the serum, and this should be especially known. Edwin Rosenthal (*Journal of the American Medical Association*, Jan. 24, 1903).

SKIN, THE, THE SURGEON'S ENEMY.

The surgeon should protect his aseptic patient from himself by gloves and protect himself from the septic or syphilitic patient by the same means. The chief danger is from the numberless micro-

organisms in every drop of sweat and sebum. For this the patient must be protected against himself as well as against the surgeon. By rubbing in a combination of some indifferent powder, as lycopodium, stearate of zinc, or talcum, with alum in a proportion of 4 to 1, the skin will not allow glandular secretion to escape for some time; so that even in the high temperature of the operating-room there will be no sweat for hours. The effect of the astringent is noticeable not only in the skin of the operation site, but also on the surgeon's hands. Professor Koenig, of Berlin, has been so much impressed by the dangers to the patient from the secretions of the hands that he has devised a special set of long forceps which do away with the necessity for the insertion of the surgeon's hands into the abdomen. With these his last six hundred cases have been absolutely without a sign of infective reaction. About the genital region, especially, the skin is apt to harbor micro-organisms. The use of rubber tissue which covers the skin area, is adherent to the skin, and is cut with it, has been suggested, but it is expensive. The astringent-powder method suggested by the author is especially suitable for these cases in the genital region, and it gives excellent satisfaction in varicocele and in hernia operations. R. H. M. Dawbarn (*Medical News*, Jan. 31, 1903).

STRABISMUS, TREATMENT OF NON-PARALYTIC.

The purpose of treatment of strabismus is threefold: To remove the deformity; to establish normal association of movement between the eyes, and to reclaim the deviating eye from amblyopia. Free tenotomy is not recommended, and advancement with previous thorough stretching of the muscles is

preferred. J. H. Woodward (New York Medical Journal, Jan. 24, 1903).

SUBPHRENIC ABSCESS SECONDARY TO APPENDICITIS.

This may occur in one of four ways: As a localized abscess, a part of general purulent peritonitis; by extension of the diseased process from the appendix to the subphrenic region by an intraperitoneal route; by extension of the diseased process by an extraperitoneal route, either by way of the lymphatics or by infiltration through the retroperitoneal tissue; by way of the blood-current as part of a general embolic septic process, or as a sequence of liver-abscesses which are of embolic origin by way of the portal vein. H. A. Christian and L. C. Lehr (Medical News, Jan. 24, 1903).

SURGICAL GYNÆCOLOGY, SOME OF THE MISTAKES OF.

The writer considers as mistakes the following features in the practice of this branch of surgery: To promise too much in the way of results; to do a major operation when a minor one will serve the purpose as well or better; to think that any particular method of operating is the only correct one in all cases; to sacrifice blood and tissue for the sake of rapidity; to attempt major operations unless he has thoroughly prepared himself by work of a similar character on the dead; to attribute to electricity the virtues many claim for it. T. A. Stoddard (Maritime Medical News, Jan., 1903).

SYPHILIS, BLOOD-PLATELETS IN.

Blood-platelets were found in large quantities by the author in the blood of syphilitics, irrespective of the stage of the disease or the symptoms that may be present. He emphasizes the fact that they are by no means specific to syphilis,

and found that they disappeared when the antisymphilitic treatment had been carried on long enough to overcome the anæmia that accompanies that disease. H. Voerner (Deutsche medicinische Wochenschrift, Dec. 11, 1902).

[*Commentary.*—Dr. Voerner's observation indirectly confirms our conclusion¹ as to the identity of blood-plates, "platelets," or "hæmatoblasts," viz.: droplets of oxidizing substance derived from the red blood-corpuscles, and which, under normal conditions, are at once dissolved in the plasma.

These so-called blood-plates have been found in a large number of diseases, all of which, such as lead poisoning, are, in the light of our own researches, characterized by a chronic—induced—adrenal insufficiency. The so-called anæmia observed in these diseases, including that of syphilis, is only the result of depletion of the peripheral capillaries, incident upon the dilatation of the larger central vascular trunks, which always accompanies marked adrenal insufficiency. The latter condition we have found involves another morbid factor, however: *i.e.*, diminution of the alkaline salts in the blood-stream. On the other hand, Rigler, von Fodor, Löwy and Richter, and other investigators have noted that alkalinity of the blood was increased by various agents—all of which, in the light of our views, proved to be adrenal stimulants.

The antisymphilitic treatment referred to by Dr. Voerner, being essentially of the latter class, sufficiently stimulated the adrenal system when carried on sufficiently long to overcome the "anæmia" of syphilis,—*i.e.*, the pallor; to cause it to resume its normal functions and to

¹ "The Internal Secretions and the Principles of Medicine," page 715.

restore to the blood its usual alkalinity, —*i.e.*, that required to enable the drop-lets of oxidizing substance to dissolve in the plasma. *Blood-plates are formed when the alkalinity of the blood declines below a certain ratio.*

If our conclusions are not erroneous, therefore, these "blood-platelets," "plates," or "hæmatoblasts" are caused by, and point to, a marked reduction of the blood's alkalinity.—S.]

SYPHILIS, CEREBRAL.

The main signs which suggest the condition are: Headache and vertigo; nausea and vomiting; optic neuritis; cranial-nerve palsies or paralyses; apoplecticiform attacks or more gradual attacks of somnolence or coma, with partial hemiplegia; irritability and general mental failures; polyuria and polydipsia; marked remittent character to all the symptoms and their changeability. A. E. Brownrigg (Boston Medical and Surgical Journal, Jan. 22, 1903).

TETANUS, TREATMENT OF.

In the United States within the past year there has been one serious epidemic of lockjaw and another of lesser extent. These unfortunate occurrences have drawn the attention of the medical profession to the disease, and the modes of prevention and treatment have been discussed at length. The old routine treatment of isolation and silence, together with the administration of chloral in large doses, has almost died out, and the injection of antitetanic serum and of carbolic acid have taken its place.

Dr. Vallas, of Lyons, at the recent meeting of the Congress of Surgery, read a long report on the treatment of tetanus, a part of which was given in the Paris letter of the Medical Record of January 3d. The writer pointed out a fact which does not appear to be thor-

oughly recognized, namely: that the antitetanic serum is really not antitetanic, but antitoxic, and that, consequently, the wound requires most energetic treatment. As a preventive, however, it is claimed that the serum is efficacious. Dr. Vallas states that whenever a wound is of a suspicious nature an injection of 10 cubic centimeters should be made the first day, and the same amount the third and tenth days. In case the wound is not healed, the injection should be repeated every fifteen days.

Baccelli's treatment of lockjaw by injection of carbolic acid has been attended with great success in Italy and elsewhere. The method consists in the injection of a 2- to 3-per-cent. solution of carbolic acid. About 30 to 40 centigrammes of carbolic acid should be injected daily. Injections of hydrogen peroxide have been tried successfully on horses, as have intravenous injections of an iodide solution. It would seem, then, that, in order to prevent an attack of tetanus, the serum should be used, while for purposes of treatment carbolic acid is a most valuable adjunct. There are those, however, who hold that carbolic acid is almost a specific in lockjaw, and the wonderful results reported from Italy from the administration of this antiseptic would almost make one believe that such is the case. On the other hand, it is asserted that tetanus is less deadly in Italy than in many other lands. Further investigation is needed before a strict line of treatment can be laid down, but in the meantime the weight of evidence shows that carbolic acid is a factor of much importance in the treatment of lockjaw. Editorial (Medical Record, Jan. 17, 1903).

TIBIAL TUBERCLE, LESIONS OF THE.

The adolescent tibial tubercle, from its situation and mode of development, is

susceptible to injuries, especially in athletic subjects. These lesions are usually caused by a violent contraction of the quadriceps extensor. Fracture and complete avulsions of the tubercle are rare, cause loss of function, and are easily diagnosed, usually clinically and always by means of the x-ray. Avulsions of a small portion and partial separation of the tubercle are more common. They do not cause complete loss of function, but, without treatment, long-continued serious annoyance. The diagnosis should be made by a combination of the clinical and x-ray pictures, and before the latter are accepted as evidence both knees should be sciagraphed and accurate technique observed. R. B. Osgood (Boston Medical and Surgical Journal, Jan. 29, 1903).

TUBERCULOSIS, ARSENIC IN THE TREATMENT OF.

As the question of the use of arsenic in the treatment of tuberculosis has recently been revived, the writer conducted a series of experiments concerning the effect of hypodermic injections of arsenic in tuberculous patients at Dr. Brehmer's sanatorium at Görbersdorf. He picked out patients in whom local improvement was as yet possible, and to verify the effect of the remedy on the temperature febrile cases were selected. The following solution for injection was employed:—

R Sodii arsen., 0.2.

Solut. ac. carb., $\frac{1}{2}$ per cent., 20.0.

The initial dose injected was 0.1 of a Pravaz syringe, increased at first daily by 0.1, and then every second day, so that by the end of two weeks a syringeful was injected. Every patient was given about twenty injections. In cases with favorable results, the injections were resumed

in two to three weeks in the previous order. The injections are but slightly painful, but care must be taken that the solution be warm. Ecchymoses at the injected spots were rather rare.

The author draws the following conclusions as a result of his investigations:

1. The above-described method of employing arsenic very often influences favorably the febrile condition, although the effect is rather short in duration.
2. The patients took on some weight.
3. The appetite improved. To effect this, arsenic is given per mouth, as its immediate contact with the mucous membrane of the stomach causes irritation of the same.
4. The patients always felt better in a general way.
5. Diarrhœa, so common after the use of arsenic, was never seen in any of the cases.
6. The evening sweating was often influenced favorably.
7. Albuminuria was never observed.
8. There was no direct effect on cardiac activity. The diminished frequency of the pulse is to be ascribed to the lowering of the body-temperature.
9. Arsenic exerts evidently no effect on the pulmonary process. Cybulski (Medical News; from Przegląd Lekarski, No. 36, 1902).

TYPHOID FEVER IN ARMIES, THE PREVENTION OF.

Unless all the water-avenues to an army or camp have been protected, it cannot be assumed that the incidence of typhoid fever is due to the air-borne agencies. It is not possible to affirm that the water-avenues to an army are closed unless sterilization and the distribution of the water are carried out by specially trained men. The evidence of air-borne typhoid fever is not clearly established in recorded Indian military experience. In South Africa and Egypt the evidence is opposed to this theory. The weight of

evidence from India, Egypt, and South Africa is immensely in favor of the paramount importance of the water-avenues, especially in the onset of epidemics, and that the spread of the disease by subsidiary avenues—flies, dust, and contact—only becomes a factor of importance under conditions of the grossest neglect of sanitation. Evidence from Egypt proves that, if the water-avenues are protected, all other avenues are powerless to originate and to spread epidemics of typhoid fever in large bodies of men. H. E. Leigh Canney (*Lancet*, Dec. 27, 1902).

TYPHOID FEVER, SERUM-THERAPY IN.

Over a year ago Chantemesse published his first article showing the results of his antityphoid serum in the treatment of typhoid fever in Paris (*Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris*, Nov. 15, 1901). At the Egyptian Medical Congress, held last month, he reported later results, from April, 1901, to December, 1902 (*La Presse Médicale*, Dec. 24, 1902). A review of the statistics of the various hospitals of Paris, omitting that under the direction of Dr. Chantemesse, showed that the combined mortality from typhoid fever was 19.3 per cent. While there were naturally variations, the lowest recorded mortality in any hospital exceeded 12 per cent. In the hospital in Dr. Chantemesse's charge, where serum-therapy was adhered to in every case, there were but 7 deaths out of 186 patients: a mortality of 3.7 per cent. Other treatment employed was practically the same in all the hospitals. Three out of the 7 deaths were due to perforation, one to purulent peritonitis, and one to intestinal hæmorrhage. All these patients came under treatment late in the disease. Chantemesse has noted no complications in patients coming under treatment

early. So necessary does he consider immediate serum-injections that he gives them even before the diagnosis is certain, for 2 cubic centimeters can do no harm. So far in Paris 356 patients have received this serum-treatment, with but 17 deaths: a mortality of 4.7 per cent. At Toulon, out of 151 patients treated, 13 died. Adding this, the mortality was 6 per cent. The German army statistics, always held up as a model in France, give a mortality of 9.5 per cent. in typhoid fever. Chantemesse explains the effect of this serum in that it is not only both anti-infectious and antitoxic, but, above all, it excites phagocytosis. Thus it is almost specific in typhoid fever. Besides, he calls attention to the necessity of isolating typhoid-fever patients for the protection of other patients. This he considers an important means of prophylaxis. Editorial (*Philadelphia Medical Journal*, Jan. 24, 1903).

TYPHOID FEVER, SURGICAL FEATURES OF.

In a review of the 275 cases of typhoid fever treated by Dr. Osler at the Johns Hopkins Hospital, during the preceding two years, the writers refer as follows to the symptoms observed in the 8 cases in which perforation occurred:—

Symptoms Before Perforation.—These, which by some writers are considered to be warnings,—and therefore, by inference, of some help,—have in some cases only served to confuse and render the diagnosis more difficult. Of course, all cases with suspicious symptoms should be carefully watched, and any increase in the abdominal features should call for surgical consultation, as has been emphasized by Dr. Osler. Yet in many of their cases the sudden onset has been the most valuable help in diagnosis. In a patient who has been having abdominal

symptoms for some days the onset of perforation may mean little change, and only the development of extensive peritonitis may be recognized. Again, considering the number of patients with suspicious abdominal symptoms, such as pain and tenderness, perhaps associated with leucocytosis, that afterward clear up completely, they cannot fail to attach less importance as an aid to diagnosis to the so-called warning symptoms and pre-perforative leucocytosis. Such symptoms occur so often unassociated with perforation that they cannot be considered as even a frequent sign of impending perforation, but should nevertheless act as a stimulus to the most careful, frequent, and thorough observation by both physician and surgeon. Probably only hourly counts of the leucocytes can be of much service in detecting a perforative leucocytosis, and, as we have seen in many cases, the perforation may occur in patients whose previous condition has not indicated the necessity of such counts. Four cases of this series of 8 presented no abdominal features before perforation. Three patients had distension, rigidity, and abdominal pain, in 2 of these accompanied by leucocytosis. In 1 case there was intestinal hæmorrhage one day before the perforation.

Onset.—One feature stands out in all but 1 of the cases, namely: the suddenness of onset with pain. In the eighth case there was pain throughout the attack, and the time of perforation could not be fixed. The patients usually cried out with the pain, so as to attract the attention of the nurse or attendants. In 2 this occurred during a tub-bath, in 1 while on the bed-pan. The pain is usually severe, and referred to various regions, most often to the lower abdomen and the umbilical region. In 2 instances it began in the penis and extended into

the abdomen; in 1 case it was localized about McBurney's point. In 2 patients the pain and perforation were accompanied by hæmorrhage from the bowels. Chill at onset was observed in 1 case, in which perforation occurred with intestinal hæmorrhage. Sweating was twice noted, both times profuse. An immediate increase in the pulse-rate was not common; it was seen in 2, in 1 of which it was accompanied by immediate increase in the respiration (in this case there was also chill, sweating, and hæmorrhage at the time of perforation).

It is to be noted that in only 1 case was there any drop in temperature at onset, and this of between 2 and 3 degrees, and immediately followed by elevation; and that in 6 there was *immediate elevation* after the onset.

Time of Perforation.—The earliest was on the eleventh day of the disease and the latest on the thirtieth. The others occurred on the twelfth, fifteenth, sixteenth (?), eighteenth, and twenty-fifth day.

Symptoms After Perforation.—These depend upon or are influenced by various factors: first, the position of the perforation; secondly, the organisms escaping into the peritoneal cavity; and, thirdly, the general condition of the patient, all of which influence the rapidity of the spread of peritonitis and the symptoms presented.

Facies and General Appearance.—The facial appearance was practically normal in 4 cases throughout, a fifth showing a pinched expression only after some hours. In 1 there was the "*risus sardonius*," and in 2 there was a distressed anxious look.

The *decubitus* was dorsal in 6 throughout, 3 of these lying with the knees drawn up. In 2 the *decubitus* was right lateral with the knees drawn up.

Sweating was observed in three cases.

Collapse was present only twice, both times in association with hæmorrhage.

Temperature.—In only 1 case was there no change in the temperature. In 7 there was slight elevation following the perforation, and this in 6 instances was followed by a fall in temperature which in 1 case reached normal. This was a case in which hæmorrhage accompanied the perforation.

Pulse.—The rate showed practically no change in 2 instances. In 6 the rate increased: 2 suddenly and 4 gradually. As a rule, the quality of the pulse becomes poorer as the symptoms progress, but this is not certain enough to be of value.

Respirations were unchanged in 3 cases. Of 5 showing increase in the rate, 3 rose gradually and 2 increased at once. In 2 there was a subsequent drop, both being cases of associated hæmorrhage which had received opium.

Hiccough occurred in 3, in 2 of which it was a rather late symptom.

Nausea and Vomiting were observed in only 1 instance and then rather late.

Bowels.—There are notes of the bowels moving in 5 cases after the perforation, 1 of these being a case of general peritonitis. In 2 cases the stools contained large amounts of blood, and in 1 there was diarrhœa with pain. Three patients expelled flatus after perforation.

Leucocytes.—In 3 cases there was practically no change in the leucocytes after perforation. In 1 of these the leucocytes were normal throughout, and in the remaining 2 there had been leucocytosis previous to the perforation, which did not change appreciably. In 5 cases the leucocytes rose in varying degree after perforation. It is significant that the 2 cases showing the greatest rise in leucocytosis after perforation were those in

which hæmorrhage and perforation co-existed. The leucocytes in these instances were 14,000 and 17,500. In the remaining 3 cases the highest leucocyte-counts were between 8000 and 12,000. [See our Commentary on page 55 in reference to the meaning of leucocytosis in typhoid fever.—S.]

Pain was a prominent symptom in 7 of the 8 cases. In the eighth it was severe at the onset, but disappeared after the administration of opium. In 5 cases it occurred in intense paroxysms, while in 2 it was constant, and varied but little in degree. It was referred to the right iliac fossa by 4, the right hypogastrium by 2, by 1 to the umbilicus, and in the last case it was general.

Appearance of the Abdomen.—The abdomen was natural and without distension in 3 instances, in 1 of which there was retraction of the walls. In a fourth there was no distension except of the lower abdomen by a myoma of the uterus. The abdomen showed distension in 4, in all of which it had been present before perforation. In 1 instance the distension remained unchanged as the symptoms progressed. In 1 it increased greatly, and in another it decreased after movement of the bowels, while in a fourth it varied in amount.

Respiratory Movements.—There was no case which showed immediate diminution of the abdominal respiratory movements. In 4 cases they were well marked throughout. In 3 they were diminished in two, six, and twenty-four hours, respectively, after perforation. In 1 case there was diminution below the navel, due to a myoma.

Rigidity was present in some degree in all, being greater on the right side in 3 and fairly general in 3. In 1 it appeared only as a late symptom.

Muscle-spasm was never a very early

symptom, the earliest time at which it was detected being about five hours after the perforation. In 2 cases there was none noted.

Tenderness on palpation was usually an early and striking sign, and often varied in degree. In 4 instances it was fairly general, and in 3 of these rather more on the right side. The point of greatest tenderness was definitely located in the right iliac fossa in 3, in the hypogastrium in 1, and in 2 it varied in position.

Liver-dullness was not diminished in 2 cases, while in 2 it had been diminished before the perforation and was practically unchanged afterward. Of 4 cases in which the liver-dullness was decreased, it occurred in 2 with a flat abdomen, and in another without any increase in the previous distension, while in the fourth it was associated with distension.

Dullness in the flanks was made out in 5 cases, in 2 of which it was definitely movable.

Auscultatory percussion was of no value in 3 cases in which it was tried.

Rectal examination was also negative except for slight tenderness in 1 case.

In 7 cases hæmorrhage was recognized within nine hours in 5, but in the 2 without hæmorrhage not until after twenty-four hours had passed. The combination is not rare; among the 34 cases of perforation in the medical service of Johns Hopkins Hospital, in 7 has hæmorrhage occurred at the same time. It may be added that in none of these was the perforation recognized early. The symptoms were always attributed at first to the hæmorrhage. This would seem to be worthy of consideration as a contra-indication to the use of opium for hæmorrhage; certainly one would say until the possibility of perforation has been excluded. But who can do this with

certainty? They thought they had done it in 1 case, but ascertained that this was wrong. The same could be said of another case in which everyone seeing the case had perforation in mind as a possibility throughout. It may be necessary to quiet a restless patient having hæmorrhage, but a small dose of morphine hypodermically will do this, and is to be preferred to opium by the mouth or bowel, the effect of which will probably last much longer.

The Diagnosis of Perforation.—The writers remark that one has only to see a few cases of perforation or study their histories to appreciate the fact that there is no regularity in the symptoms and that no symptom or group of symptoms is pathognomonic. Thomas McCrae and James F. Mitchell (Johns Hopkins Hospital Reports, vol. x, Nos. 6-9, 1902).

TYPHOID FEVER, THE FREE USE OF BEVERAGES IN.

The writer, along with other French authorities,—Albert Robin, for instance,—has long been an opponent of the use of antipyretics in febrile processes. The predominating factor of typhoid fever, he contends, is a paresis of all organic functions, and hyperthermia is not deemed a causative factor of the morbid effects ascribed to it, but itself a consequence of this paresis. The latter is primarily due, in his opinion, to the influence of the infected blood upon the nervous system.

A free use of beverages is advocated, at least a quart of liquid being administered in the twenty-four hours. Milk is given the preference, owing to its nutritive and diuretic attributes, and may be drunk freely, as much as 5 pints a day being allowed by the writer wherever possible. It may be given in its normal state or boiled. If such free use of bev-

erages should be objected to by the patient, enemata of boiled water or milk, repeated several times during the twenty-four hours, should be resorted to in order to at least compensate for the quantity of beverage refused. Patients usually crave fluids, however, and compensative measures are seldom required. Liégeois (Journal des Praticiens, Dec. 13, 1902).

X-RAYS, PATHOLOGY OF THE TISSUE-CHANGES INDUCED BY.

In a study of four specimens of malignant growths removed by operation the writer found the following changes: There was found (1) necrosis of cell and trabeculae of varying degree; (2) increase of elastic tissue; (3) fewer areas of lymphocytic infiltration; (4) a tendency to occlusion of vessels by deposits on their

inner surface; (5) practically entire absence of infiltration of polynuclear leucocytes. Though some lay stress on the vascular changes as a cause of necrosis, the writer contends that endarteritis is probably induced by the x-ray, the accompanying tissue-necrosis being out of proportion to the vessel-changes, suggesting the possibility of these being *pari passu* results of the same influence instead of cause and effect. The pressure of immense numbers of cocci and bacilli in one case after a twenty minutes' exposure argues against any bactericidal effect. The unsatisfactory clinical results, as well as the slight microscopical changes of another case, he attributes to the presence of a large number of pearls. A. G. Ellis (Proceedings of the Pathological Society of Philadelphia, Dec., 1902).

Books and Monographs Received.

The editor begs to acknowledge, with thanks, the receipt of the following books and monographs:—

Annual Reports of the Department of Agriculture for the Fiscal Year Ended June 30, 1902. Report of the Secretary of Agriculture, Departmental Reports. Washington, 1902.—The Treatment of Corneal Infiltrations by Iodine-vasogen. By Alexander Duane, New York, 1902.—I. Simultaneous Paretic Mydriasis, Subluxation of the Lens, and Rupture of the Choroid, with Marked Involvement of the Retina. II. A Peculiar Form of Persistent Pupillary Membrane. By A. Duane, New York, 1902.—A New Sign of Pleuritic Effusion in Children. By Samuel W. Kelley, Cleveland, Ohio, 1902.—A Case Illustrating the Neglected Results of Infantile Paralysis and the Treatment. By S. W. Kelley, Cleveland, Ohio.—Rheumatic Appendicitis: a Study of the Relation of Rheumatism to Appendicitis. By William A. Edwards, Coronado, Cal. 1902.—A Specimen of Diphtheritic Membrane. By Samuel W. Kelley, Cleveland, Ohio, 1902.—The Use of the Electric Cautey Clamp in the Treatment of Cancer of the Uterus. By Charles P. Noble, Philadelphia, 1902.—Symmetrical Gangrene (Raynaud's) *Versus* Endarteritis Obliterans. By James Dudley Morgan, Washington, D. C. 1902.—The Conflict with Tuberculosis. By John H. Lowman, Cleveland, Ohio, 1902.—The Surgical Treatment of Tuberculous Peritonitis. By A. J. Ochsner, Chicago, Ill. 1902.—Essentials in the Construction of Hospitals for Large Cities. By A. J. Ochsner, Chicago, Ill. 1902.—Congenital Dislocation of Hips, with Report of Cases and Description of a Pelvis Obtained Three Years After Successful Reduction by the Lorenz Method. By Edward H. Ochsner, Chicago, Ill. 1902.—Clinical Observations on the Surgery of the Gall-bladder. By Albert J. Ochsner, Chicago, Ill. 1902.—Some Considerations on the Hygienic and Prophylactic Treatment of Myopia. By Alexander Duane, New York, 1902.—The Book-worm. By Frederick P. Henry, Philadelphia, 1903.—Methods of Controlling the Boll Weevil. By W. D. Hunter. United States Department of Agriculture, Washington, D. C. 1903.—Report of the Editor for 1902. By George William Hill. United States Department of Agriculture, Washington, D. C. 1902.

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THE DUCTLESS GLANDS AS ORGANS OF THE FIRST IMPORTANCE IN VITAL FUNCTIONS, AND THEIR RELATIONSHIP AS SUCH TO DISEASE AND THERAPEUTICS.

In our paper read before the County Medical Society, February 25th, and published *in extenso* in the *Philadelphia Medical Journal* of March 7th, we presented an outline of the functions of the ductless glands. As the paper embodied various features reviewed in our last issue, we will only quote from the original article the portions which furnish further details upon a given subdivision of the whole subject. Especially does this apply to the functions of the leucocytes, which, in our opinion, belong to the category of organs that supply the blood and the tissues with an internal secretion.

The element which formed the basis of our study of the nature of life's processes was oxygen, the action of which, as regards tissue-respiration, was admittedly unknown to physiologists. When, therefore, in the course of time, we took up the study of the functions of the ductless glands, the marked affinity of the suprarenal secretion for oxygen could not but attract our attention. Cybulski,¹ for example, had found that weak doses of potassium permanganate destroyed the

¹ *Gazeta Lekarska*, March 23, 1895.

activity of suprarenal extract. Moore² had ascertained that the color-reactions noted by Vulpian were destroyed by oxidizing the reducing agent. Abel³ had observed that suprarenal extractives were so prone to become oxidized as to become a source of great inconvenience. Takamine⁴ had noted that his adrenalin was easily oxidized by contact with the air. We had evidently found the true path, for it furnished a clue to many previously unknown physiological functions.

The itinerary of the suprarenal secretion first received our attention. We soon met an obstacle, however: We could not trace it beyond the pulmonary alveoli. Still, this served to recall the doubts expressed by an increasing number of physiologists as to the correctness of prevailing views concerning the respiratory process. Could the suprarenal secretion possibly endow the blood with its affinity for oxygen? The weakness of present teachings grew apace as our inquiry progressed. The older labors of Robin, Verdeil, and Garnier had led Prof. Mathias Duval, of Paris, to say, in his "Lectures on Physiology": "It is, perhaps, wrong for physiologists to continue only to see in these phenomena mere results of endosmosis of liquids and of diffusion of gases through an inert membrane." Professor Reichert, of our city, alluding to the interchange of O and CO₂ between the alveoli and the blood, also remarks, in the "American Text-book of Physiology," edition 1900, after reviewing the generally accepted doctrines: "It is, however, impossible under certain conditions, and possibly under ordinary conditions, to account for the transmission of all of either the O or the CO₂ by the laws of diffusion. Bohr⁵ found, in experiments upon dogs, that the tension of oxygen in arterial blood is almost invariably higher than the partial pressure of oxygen in the lungs, and, in some instances, considerably higher. His records of CO₂, while lacking uniformity, are of like import and indicate that the tension of CO₂ in the blood is lower than the partial pressure of this gas in the lungs. Although Bohr's results have met with much adverse criticism, they have received substantial support in the recent researches of Haldane and Smith⁶ on mice, birds, dogs, and other animals. They found that the normal oxygen-tension in arterial blood is always higher than in alveolar air, and they were consequently led to conclude that the transmission of O between the alveoli and the blood cannot be satisfactorily explained by mere diffusion. Moreover, about twice as much argon exists in solution in the bloodplasma as can be accounted for by physical laws. Facts of this kind are explicable on the hypothesis that the living tissues are, as contended by Ludwig, Bohr, and others, actively engaged in the process, but our knowledge is as yet too incomplete and contradictory to justify its acceptance."

Our own investigation, which took up all phases of the subject and cannot possibly be given here, served only to justify the doubts expressed, for it showed that:—

When the venous blood reaches the pulmonary alveoli, the marked affinity of the

² Journal of Physiology, volume xviii, page 230.

³ Johns Hopkins Hospital Bulletin, September-October, 1898.

⁴ Therapeutic Gazette, April 15, 1901.

⁵ Skandinavisches Archiv für Physiologie, Bd. ii, S. 236, 1891.

⁶ Journal of Physiology, volume xxii, page 231, 1897.

adrenal secretion in the plasma for oxygen causes it to absorb this gas from the alveolar air. The carbonic dioxide in the blood is thus forcibly replaced by oxygen and expelled with corresponding vigor. The red corpuscles, after this operation, bathe in an oxygen-laden medium, and their hæmoglobin becomes reconverted into oxyhæmoglobin.

We state that the *plasma* takes up the oxygen, thus emphasizing the secondary rôle played by the red corpuscles as oxygen-carriers. The evidence we were able to muster pointing directly or indirectly to this fact may be characterized as overwhelming. Not only did physiological chemistry prove the existence of an oxygen-laden compound in the blood-serum through the labors of Schmiedeberg, Jaquet, Salkowski,⁷ Abelous and Biarnés,⁸ and others, but where we had previously met nothing but obstacles we now entered easily-followed paths ready to accommodate a multitude of recorded experimental facts—the products of patient workers in all civilized countries. Oxygen, once a constituent of the bloodplasma, it could penetrate where red corpuscles had never been observed and through channels the functions of which had not been associated with the circulation. The cellular elements of all parts of the organism thus became tangible quantities, as it were: they had been brought into direct contact with their exogenous source of energy.

The functions of the internal secretion of the adrenals which had asserted themselves so far, therefore, can be defined as follows:—

The physiological function of the internal secretion of the adrenals is loosely to combine with the atmospheric oxygen in the lungs and to endow the bloodplasma with its oxidizing properties.

The organic compound or oxidizing substance thus formed in the lungs we have ventured the name "adrenoxin": a term which will henceforth be employed in this paper.

So important a function betokened the existence of a center capable of regulating the production of adrenal secretion and, therefore, of adrenoxin. A study of the experimental data upon the innervation of the adrenals, including those recorded by Biedl,⁹ Soddu,¹⁰ Howell,¹¹ Dreyer,¹² and Dogiel,¹³ among others, fully sustained this assumption. Biedl's experiments had demonstrated, for example, that when the splanchnic nerve was cut and the suprarenal branches were stimulated, hyperæmia of the adrenals occurred. Howell, on the other hand, had found that stimulation of the glandular end of the cut splanchnic nerve did not increase the amount of the blood poured by the adrenals into the efferent vein, but that it augmented the proportion of adrenal secretion in that blood. Dogiel, in turn, had noted that the plexiform arrangement and the nerve-cells of the

⁷ Virchow's Archiv für pathologisches Anatomie, January 4, 1897.

⁸ Archives de Physiologie, volume 1895.

⁹ Pflüger's Archiv, volume lxxvii, H. 9 and 10, 1897.

¹⁰ Lo Sperimentale, No. 2, 1898.

¹¹ Transactions of the Congress of American Physicians and Surgeons, volume iv, 1897.

¹² American Journal of Physiology, January 18, 1899.

¹³ Archiv für Anatomie und Physiologie, page 90, 1894.

cellular elements of the adrenals differed in no way from those of any sympathetic ganglion. We had clearly suggestive evidence here that the sympathetic ganglionic chain and the splanchnic served for the transmission of efferent impulses capable of causing fluctuations in the production of adrenal secretion, and that if there was a center it should prove to be one of unusual importance and connected with the sympathetic system.

If the sympathetic is supplied with an autonomous center, it has not as yet been discovered. Traced upward, the ganglionic chain communicates with various ganglia of the first and second divisions of the fifth pair, but everywhere distinct sympathetic fibers do not lead to a possible point of origin, but to structures to which they are distributed as efferent filaments. The fact that various nerves that communicate with the spinal system are not regarded as sympathetic, but as motor and sensory fibers intended to reinforce the ganglia, suggested that the medulla might contain a nucleus capable of fulfilling the functions of adrenal center. We could find no experimental evidence to that effect, however, although the bulb and its centers had received more attention in experimental physiology than many other important structures combined. Finally, as is well known, the sympathetic ganglia and the splanchnic nerves respond in a slow and characteristic way to stimulation, while the response obtained when spinal nerves are excited is sudden and decided. Stimulation of the nervous supply of the adrenals gives rise to phenomena essentially characteristic of stimulation of sympathetic structures. This exactly coincides with the observation of Dogiel, that the structure of the nervous supply of the adrenals differed in no way from that of a sympathetic ganglion. Search among familiar paths had, therefore, to be abandoned.

We then retraced our steps from the adrenals upward, followed the great splanchnic along the ganglionic chain, and traced filaments of the splanchnic nerve to the first, or upper, cervical ganglion. The medulla and the cephalic branches being out of question, the filaments given off by the carotid plexus immediately above the superior cervical ganglion were then studied anew. The available literature upon this subject was rather scant, but in the older works, after a roundabout research into the pathological aspect of the question, we ascertained that Tiedmann, Pourfour du Petit, Fontana, Bok, Hirschfeld and Bourguery had traced sympathetic fibers to the pituitary body. Hirschfeld,¹⁴ in fact, emphasizes the fact that he had invariably traced fibers from the superior cervical ganglion to this organ. That time has not served to counteract this teaching is shown by the more recent researches of Berkley, of Johns Hopkins,¹⁵ who, referring to the *anterior* lobe of the pituitary, writes: "All nerves belonging to it appear to be derived from branches of the carotid sympathetic plexus." He then strengthens his assertion by the statement: "Nerves other than those belonging to the sympathetic system are not found." A concomitant study of the experimental physiology of the pituitary body and of the ultimate effects of sympathectomy and a rather extensive research into the pathogenesis of acro-

¹⁴ "Système Nerveux et Organes des Sens de l'Homme," Paris, 1866.

¹⁵ Brain, Winter, 1894.

megaly and other disorders of the pituitary, having likewise pointed to phenomena directly ascribable to functional disturbance of the adrenals, it became clear that we had found the governing center of these organs, and that the following conclusion (abbreviated herein) was warranted:—

The anterior pituitary body governs the functional activity of the adrenals and is directly connected with these organs through the cervico-thoracic ganglia, the splanchnic nerves, and the semilunar ganglia of the sympathetic system.

SYMPTOMS THAT FOLLOW: (1) REMOVAL OF BOTH ADRENALS IN MAMMALS; (2) HÆMORRHAGE INTO BOTH ADRENALS; (3) SUDDEN CESSATION OF ADRENAL FUNCTIONS AS A RESULT OF ORGANIC DISEASE.	CARDINAL SYMPTOMS OF ASIATIC CHOLERA.	CARDINAL SYMPTOMS OF CHOLERA INFANTUM, CHOLERA NOSTRAS; TARTAR EMETIC AND ARSENIC ACUTE POISONING; POISONING DUE TO INGESTION OF CERTAIN TOXIC FOODS, MEAT, MILK, FISH, AND MUSHROOMS (PHALLINE) ESPECIALLY.
1. Great weakness, with gradual loss of muscular power.	1. Marked muscular weakness.	1. Rapid loss of strength.
2. Violent abdominal pain.	2. Violent griping pain.	2. Abdominal discomfort and pain.
3. Great reduction of vascular pressure; pulse small and weak.	3. Pulse rapid and weak; sometimes intermittent.	3. Pulse rapid, weak, and intermittent.
4. Temperature subnormal just before death especially.	4. Temperature in mouth and on surface very low, but 104° F. in rectum.	4. Temperature subnormal, but rectal temperature 103° to 105° F.
5. Respiration frequent and difficult; dyspnoea; sometimes cyanosis.	5. Respiration frequent and difficult, and cyanosis.	5. Respiration rapid; labored; Cheyne Stokes type sometimes.
6. Urine scanty.	6. Urine scanty; sometimes suppressed.	6. Urine scanty; sometimes complete anuria.
7. Abundant liquid stools.	7. Rice-water; serous stools.	7. At first bile-stained stools, and then nothing but serum.
8. Death; coma; convulsions.	8. Coma; convulsions.	8. Coma; convulsions.
9. Proves fatal in from 20 minutes to 3 days.	9. Proves fatal in from 2 to 3 days.	9. Proves fatal in from a few hours to 4 days.

A long line of research into the physiological action of some forty of the more important drugs and venoms had brought out a feature of marked importance: *i.e.*, the similarity of the action of all poisons, including toxalbumins and venoms, to the phenomena that ensue after the experimental removal of both adrenals or hæmorrhage into these organs. When this observation was extended to the effects of disease toxins, it became evident that sufficiently active doses brought on symptoms corresponding to those of other poisons. This is shown in the table given above, in which the cardinal symptoms of adrenal hæmorrhage,

adrenalectomy, Asiatic cholera, acute arsenic poisoning, and other conditions are compared.

As this series might have merely represented symptoms capable of being interpreted without reference to the adrenals, the diseases peculiar to these organs—Addison's disease, interstitial hæmorrhage, tumors, etc.—were taken up. We then ascertained that the steady decline of adrenal functions incident upon these local conditions gave rise to phenomena which *gradually* assumed those of total arrest of adrenal functions, but that this gradual development of morbid phenomena was attended by several symptoms which did not appear when adrenal functions were suddenly arrested. Bronzing, for example, only appeared, we found, when the adrenals had reached an advanced morbid state from one cause or another. This led to the discovery that methæmoglobin and hæmatoporphyrin, both constituents of hæmoglobin, were held in combination by the adrenal secretion, and that the presence of these pigments in the urine indicated advanced insufficiency of both adrenals. Now, hæmatoporphyrin and hæmatoïdin, the pigment of bronzing, are isomers, and the brown urine of hæmatoporphyrinuria caused by venoms is but the prototype of bronzing, the pigment in the latter case being deposited in the skin instead of passing out with the urine. Indeed, Garrod¹⁶ and Stockvis¹⁷ found hæmatoporphyrin in small quantities in normal urine and almost always in pathological urine. Various other observers, including MacMunn,¹⁸ D. Fraser Harris,¹⁹ Nakarai,²⁰ and Ogden,²¹ have collectively found it in rheumatic fever, pericarditis, peritonitis, meningitis, cirrhosis of the liver, croupous pneumonia, typhoid fever, measles, Hodgkin's disease, exophthalmic goiter, pulmonary tuberculosis, pleurisy, leprosy, lead poisoning, and chronic poisoning with sulphonal, trional, and tetronal. Bronzing or bronze spots also occur, as is well known, in many disorders: abdominal growths, diabetes, exophthalmic goiter, tuberculosis, chronic gastric and hepatic disorders, hysteria, etc. All this, of course, is confirmed by experimental evidence in animals and particularly by that afforded by Boinet,²² who, having excited an inflammatory process in the adrenals of twenty rats, found that in several of them (those doubtless in which the local lesions were sufficiently marked) the subcutaneous cellular tissue was permeated with hæmatoïdin: a pigment which, submitted to analysis, proved to be similar to that found in the same structures in Addison's disease.

These few facts of the large number we collected and analyzed showed conclusively that the adrenals were functionally depressed by any drug, toxic, or toxin when the quantity introduced into the organism was sufficiently active, and that the general symptoms caused by all these poisons were of adrenal origin. The more our work progressed, the more did this deduction affirm itself.

Adrenal insufficiency obviously meant a lower ratio of adrenoxin in the blood

¹⁶ Journal of Physiology, volume xvii, No. 5.

¹⁷ Jahresberichte für Therap.-Chemie, volume xxiii, 1893.

¹⁸ Journal of Physiology, volume 1885.

¹⁹ British Medical Journal, February 5, 1898.

²⁰ Deutsches Archiv für klinische Medizin, Nos. 2 and 3, 1897.

²¹ Boston Medical and Surgical Journal, February 24, 1898.

²² Marseille-médical, April 15, 1896.

and correspondingly reduced metabolic activity. A normal inference to be derived from this fact was that excessive metabolic activity, which, reduced to terms of adrenal functions, likewise meant excessive adrenal activity, was the underlying factor of all general symptoms which suggest erethism. The correctness of this deduction was shown in various ways: *i.e.*, the effects of adrenal extractives as recorded in the experiments of various investigators, including Oliver and Schäfer,²³ Seymonowicz,²⁴ Auld,²⁵ and Isaac Ott,²⁶ and the action of various toxic agents and toxins upon the adrenals, as studied by Langlois and Charrin,²⁷ Roger,²⁸ Wybauw,²⁹ F. Arnaud,³⁰ and numerous other investigators. Not only was a perfect concordance of the general symptoms brought on by the many toxics and toxins used evident, but the brand of overwork, hypertrophy, was a noticeable feature of all adrenals examined *post-mortem*. Even this feature of the problem was controlled by the experiments of Stilling³¹ in rabbits and Auld,³² which showed that removal of one adrenal was followed by hypertrophy of the other. On the whole, all the evidence obtainable imposed the conclusion that:—

All general symptoms witnessed in disorders in which the blood is invaded by a poison of any kind are, in reality, manifestations of overactivity, insufficiency, or inactivity of the adrenals.

The manner in which all drugs, poisons, toxins, etc., either stimulated or depressed the functions of the adrenals and with them all the oxidation processes of the organism had next to be ascertained. As we had found that fluctuations of adrenal activity were governed by the anterior pituitary body, it seemed but logical to conclude that upon this organ all toxics that penetrated the blood-stream acted. Further evidence of this was found when the functions of the thyroid gland were analyzed.

The close relationship between the thyroid and all oxidation processes is well illustrated in myxœdema and cretinism. The effects of thyroid extract in these disorders is so striking in this connection as to have led Robert Hutchinson³³ to close a review of the subject with the remark: "Briefly, then, it may be said that the effect of the administration of the thyroid is to increase oxidation in the body; it makes the tissues, as it were, more inflammable, so that they burn away more rapidly." How is this brought about?

We are dealing here with another internal secretion, the anterior pituitary body being, in reality a nervous structure. The arteries of the thyroid are remarkable for their large size, and their veins are correspondingly large. The great

²³ Journal of Physiology, volume xviii.

²⁴ Archiv für die gesammte Physiologie, Bd. lxiv.

²⁵ British Medical Journal, June 3, 1899.

²⁶ Medical Bulletin, January, 1898.

²⁷ Comptes-rendus de la Société de Biologie, July 10, 1896.

²⁸ Berliner Klin. Wochenschrift, January 21, 1894.

²⁹ Annales de la Société Royale de Médecine de Belgique, volume vi. Nos. 2 and 3, 1897.

³⁰ Archives Générales de Médecine, July, 1900.

³¹ Virchow's Archiv, December, 1899.

³² British Medical Journal, June 3, 1899.

³³ British Medical Journal, July 16, 1898.

volume of blood which passes through them travels in a suggestive direction: to the internal jugular and innominate veins, thence to the vena cava. As in the case of the adrenal secretion, the thyroid secretion must therefore penetrate the pulmonary circuit, return to the heart (when converted into adrenoxin in the case of the adrenal secretion), and then be distributed throughout the organism. As shown by various observers, iodine is the main active constituent of all thyroid extractives. Employed therapeutically, it gives rise to all the manifestations of activity which other agents among those capable of stimulating the adrenals procure; it does more than any, however, in that it can raise their functional activity to the highest degree without overwhelming them: without, in other words, suddenly causing insufficiency of the adrenals or arresting their functions. The "cumulative" action of a drug, digitalis, for example, is naught else than suddenly induced adrenal insufficiency. Thyroid extract, as is well known, has produced similar effects. What, then, is the difference between iodine and any other drug that may be introduced into the blood? Simply this: Iodine in organic combination is Nature's own stimulant; it sustains the functional activity of the anterior pituitary body. When the functions of the thyroid are inhibited, the pituitary and the adrenals become correspondingly inefficient, and all the oxidation processes of the organism are reduced in proportion, as exemplified by the syndromes myxœdema and cretinism. Thyroid extract reawakens Nature's normal processes, however,—sets the organism aglow; "it makes the tissues, as it were, more inflammable," and adequate cellular metabolism, we know, means life. It also means, however, that "they burn away more rapidly"; nay, sometimes *too* rapidly, for there may be overproduction of thyroid secretion,—hyper-oxidation: *i.e.*, the symptom-complex we recognize as exophthalmic goiter.

It has thus become apparent that, while exophthalmic goiter is the result of adrenal overactivity, myxœdema and its infantile form, cretinism, are due to adrenal insufficiency. But here, as in all intoxications, the physiological action of drugs or of bacterial toxins asserts itself; the phenomena witnessed have proven to be results of excessive, or reduced, functional activity, not of the thyroid, anterior pituitary body, or adrenals, as individual organs, but as *related* organs. Indeed, the following conclusion is fully sustained by the evidence collected from various directions:—

The thyroid gland, the anterior pituitary body, and the adrenals are functionally interdependent, and constitute a system, the "adrenal system," which has for its purpose to sustain physiological oxidation and the metabolic activity of all tissues.

THE FUNCTIONS OF LEUCOCYTES.

What is the nature of the substances submitted to oxidation by the adrenoxin of the plasma? Strange as it may seem, the white corpuscles we found to play the leading part in this connection. While the red corpuscles proved to be mere storage-cells, calculated to take on a load of adrenoxin and carry it to all parts of the organism, the investigation showed that the white cells were the seat of a complex process, their function being not only to gather from the gastrointestinal tract the proteids, hydrocarbons, minerals, water, etc., required by the

various cellular colonies of the body, but to convert them into the final products ultimately to be oxidized in the various organs to which they carried them.

The structure of the white corpuscles or leucocyte was first studied, beginning with the mitoma or network of threads or fibers with which each cell is permeated. With the aid of experimental evidence recorded by Gulland,³⁴ Stokes and Wegefarth,³⁵ Wynn,³⁶ and others, and the confirmatory evidence afforded by staining methods, we were able to ascertain that these intracellular fibers were, in mature leucocytes, not mere protoplasmic threads, as generally believed, but minute channels, or canaliculi, for bloodplasma and granules. Hankin, ten years ago, advanced the view that acidophile granules were secretory products destined to be secreted into the blood or lymph; Kanthack, Hardy, and Keng have taken much the same view. Our conclusion that the fibers were minute channels thus found itself doubly controlled, since the granules are located along the fibers and increase in size from the center toward the periphery. Evidently we were dealing, as regards the granules, with products formed in the cell itself and gradually forced centrifugally toward the surface, to be dealt out as needed.

The manner in which leucocytes ingest various substances is well known, especially since the investigations of Metchnikoff into the phagocytic properties of these cells. We were led, by the fact that the network of fibers had proved to be canaliculi, and a study of the data published by this distinguished zoologist concerning the digestive process in lower organisms, to recognize an *inter-canalicular* absorption process. Thus, leucocytes could not be said only to ingest materials by projecting pseudopodia, *i.e.*, by "infolding," or "inglobing," but this act proved to be limited to the ingestion of solid or semisolid bodies, fluids being taken in by simple absorption: through their protoplasm or by a process similar to that observed in some species of sponge, in which the cylindrical cells of the endoderm keep up a continuous passage of water through the sponge-substance. This is an important feature of pathology, since it is mainly through such a mechanism that alkaline salts penetrate into the cell-substance to the nucleus.

The plasma and its adrenoxin were thus traced from the surface to the nucleus, the cell's laboratory, which also proved to be supplied with a network of plasma-channels, or canaliculi. But it was here that we obtained a first inkling of the vital process, for the plasma was found, with the aid of staining methods, to contain adrenoxin, rich in oxygen. Nuclein, the main component of the nuclear substance, contains, as is well known, nearly 10 per cent. of phosphorus. Oxygen-laden plasma brought in contact in the nuclear canaliculi with phosphorus-laden nuclein offers precisely the conditions necessary for the liberation of considerable energy. Indeed, Pflüger,³⁷ referring to the photogenic organs of lightning-bugs, says: "Here, in the wonderful spectacle of animal phosphorescence, Nature has given us an example that shows where the taper burns that we call life. . . . It is certainly no rare exception, but only the special expression of the general

³⁴ *Journal of Physiology*, volume xix, 1896.

³⁵ *Bulletin of Johns Hopkins Hospital*, December, 1897.

³⁶ *Journal of Anatomy and Physiology*, April, 1900.

³⁷ "General Physiology," by Max Verworn; translated by F. S. Lee, 1899.

law, that *all* cells are burning continually, although with our corporeal eyes we do not see the light."

The considerable heat thus developed became an important factor of the whole intracellular process when the fact that when boiled with alkalies nuclein yields phosphoric acid was recalled. "The phosphoric acid of the urine," writes Purdy,³⁸ "is derived in part from the food and in part from the decomposition of lecithin and leucin. The excretion of phosphoric acid by the kidneys varies with the amount of food taken." This primary and intimate association with the aliment intake became very suggestive in the light of subsequent developments, especially since it suggested that it was the function of the leucocytes to ingest foodstuffs in the intestinal canal, then digest and convert them into the organic bodies to which tissue-cells owed their activity, in the presence of adrenoxin brought to them in the plasma. Again, a feature of great practical importance also came to light, *i.e.*, the rôle of alkaline solutions in disease, since it became apparent that, besides their rôle in osmosis, diapedesis, etc., these salts were indispensable factors in the physiological chemistry of the cells which kept up the vital processes of the entire organism.

The manner in which leucocytes were supplied to the intestinal canal and returned to the circulation, and their itinerary in the bloodstream, then had to be ascertained. Lymphocytes and hyalines having proved fully entitled to the position generally accorded them, *i.e.*, that of immature leucocytes, the three main cells distinguished by Ehrlich, the neutrophiles, eosinophiles, and basophiles, were studied.

Neutrophile Leucocytes.—These cells, as is well known, constitute about three-fourths of the blood's white corpuscles and, simultaneously, Metchnikoff's main group of phagocytes. Phagocytosis merely means the power to ingest and digest; wherever, therefore, phagocytic cells happen to be, they ingest and digest whatever substance, solid, semisolid, or fluid, for which they may possess what has been termed "chemotaxis." Foodstuffs, bacteria, and toxins are equally attractive to them unless satiated.

Macallum³⁹ observed, in sections of intestines taken from animals first starved, then fed upon a substance containing albuminate of iron, free leucocytes crowded with granules of *iron-pigments*, in the intestine. Some of these cells appeared to pass out through the epithelial cells, while others advanced into the sub-epithelial elements. He also found them in the venules of the villi, the spleen, etc. L. F. Barker⁴⁰ has likewise noted the presence of iron in leucocytes. Metchnikoff,⁴¹ in the course of an analysis of the functions of phagocytes, refers to "the presence of *peptones* in leucocytes which has been so often proved by Hofmeister"; and, since peptones are the terminal products of the digestion of proteids, the latter must have been taken up by the intestinal leucocytes precisely as Macallum had found them to take up albuminate of iron.

³⁸ "Practical Urinalysis and Urinary Diagnosis," page 56, edition 1900.

³⁹ Journal of Physiology, volume xvi, 1894.

⁴⁰ Johns Hopkins Hospital Bulletin, October, 1894.

⁴¹ "Lectures on the Comparative Pathology of Inflammation"; translated by F. A. and E. H. Starling, 1891.

Again, Stewart,⁴² in reviewing present teachings as to the assimilation of gastric and intestinal proteoses and peptones, writes: "They rapidly disappear from a portion of the mucous membrane kept at a temperature of about 40° C. outside the body; but *not* if it has been thrown into boiling water immediately after excision, nor even if it has been heated at 60° C. for a few minutes and then kept at 40° C. Now, a temperature of 60° C. does not destroy an unorganized ferment, but kills a *living cell*. The regeneration of the proteose and peptone must, therefore, presumably take place in cells, and the only available cells in this locality are those which *line* the intestine, or the *leucocytes* which wander *between* them. Accordingly, both have been credited with the power of absorbing and transforming these substances." Foster adds another link to the chain of evidence when he says⁴³: "While some observers have succeeded in finding peptone in the portal blood after food, but not during fasting, many have failed to demonstrate the presence of peptone in the blood either of the portal vein or the vessels at large, even after a meal containing large quantities of proteids." Again: "If an artificial circulation of blood be kept up in the mesenteric arteries supplying a loop of intestine removed from the body, the loop may be kept alive for some considerable time. During this survival a considerable quantity of peptone placed in the cavity of the loop will disappear, *i.e.*, will be absorbed, but cannot be recovered from the blood which is being used for the artificial circulation, and which escapes from the veins after traversing the intestinal capillaries. The disappearance is not due *to any action of the blood* itself, for peptone introduced into the blood before it is driven through the mesenteric arteries in the experiment may be recovered from the blood as it escapes from the mesenteric veins. It would seem as if the peptone were changed *before* it actually gets from the interior of the intestine into the interior of the capillaries." In the light of our views it became apparent that the peptone was hidden in leucocytes, even while these cells migrated with the blood of the mesenteric and portal veins.

Macallum's observation as to the presence of leucocytes in the intestinal canal and in the villi found itself confirmed by our analysis of the manner in which these cells entered the digestive tract and left it. The intestinal lymph-follicles, including the agminated follicles, or Peyer's patches, asserted their identity as the normal source of these cells, containing, as they do, a central nodule, described by Flemming, in which leucocytes proliferate. How they pass out is suggested by the presence above the nodule of a fenestrated subepithelial membrane, "the orifices of which," according to Berdal,⁴⁴ "appear to afford passage to lymphatic cells that emigrate from the follicle toward the cavity of the intestine." They were then traced to the villi, and thence through the mesenteric and portal veins.

What are the functions of neutrophile leucocytes? The physiological process through which food-products leave the intestines and are distributed throughout the organism is quite unknown, as we have just seen. Conversely, leucocytes, in the light of the data we have just submitted, plainly showed their ability to satisfy

⁴² "Manual of Physiology," fourth edition, 1900.

⁴³ "Text-book of Physiology," sixth edition, 1895.

⁴⁴ "Histologie Normale," Paris, 1894.

the needs of the problem, and to account for the proximate and remote phenomena connected therewith. They are evidently capable of ingesting various substances, since neutrophiles include the only two wandering phagocytic cells recognized as such by Metchnikoff, the polymorphonuclear and mononuclear leucocytes. They evidently ingest proteids. Even the end-product of each cell, *i.e.*, the granules, attest to this fact. Sherrington had suggested that they might be "of nucleoproteid nature"; Milroy and Malcolm,⁴⁵ after chemical analysis of the granules, supported the view that they are composed of a "complex proteid substance." The origin of the peptones found in these cells thus became a normal consequence of their rôle in the intestine.

To speak of "peptones" as granules seems unusual, but, as is well known, various secretions, those of the pancreas and parotid gland, for example, assume this form in the organ itself.

Still, why the "complex" character of these granules to which Milroy and Malcolm refer? Again, as the name "neutrophile" given these cells by Ehrlich suggests, why are they simultaneously basophile, or base-loving, and oxyphile, or acid-loving? This suggested the presence of other constituents, which, in fact, were actually found in these cells by various observers, and which could readily be accounted for by the promiscuousness of the food-materials which leucocytes ingest in the intestine. Indeed, they do not only ingest proteids, but carbohydrates likewise: sugars and starches.

The latter compounds proved to be related to muscular activity. That leucocytes ingest particles of starch paste was shown by the experiments of Zabolotny,⁴⁶ who states that the cells are thus rendered iodophile. This, it will be remembered, is the glycogen reaction, and glycogen is closely associated with muscular activity. Foster adds his valued testimony to this feature of the question when he writes: "In the case of many corpuscles, at all events, we have evidence of the presence of a member of the large group of carbohydrates, comprising starches and sugars, *viz.*: the starch-like body glycogen." The bearing of all this appears when he adds: "And we have reasons for thinking that in the living white corpuscle there does exist a body identical with or allied to *myosinogen*." We may now state that, long before we had at all studied the leucocyte, we had been led to the conclusion that the immanent constituent of muscle-cells which, under the action of adrenoxin, supplied the muscle with its mechanical energy was myosinogen.

But myosinogen proved not only to be used in muscle-cells, but likewise in the blood. The identity of myosinogen as a member of the globulin group of proteids had led us to suspect that other members of this group, particularly the fibrinogen of the plasma, were of leucocytic origin. We had not far to seek. Stewart, alluding to the origin of nucleoproteid, writes: "In shed and clotting blood the only possible sources of nucleoproteid, so far as we know, are the corpuscles and the bloodplates." After dismissing the red corpuscles he adds: "We have left over the leucocytes and the platelets. The latter are said, and the former

⁴⁵ Journal of Physiology, volume xxv, 1899.

⁴⁶ Russian Archives of Pathology, April, 1900.

are known, to yield nucleoproteids when they are broken up in the laboratory; and it is highly probable that from both, but especially from the white corpuscles, *nucleoproteid* is liberated in the first moments after blood is shed, and that this nucleoproteid is then changed into *fibrin-ferment*." Ranvier,⁴⁷ many years ago, emphasized the relationship between free granules, the so-called elementary vesicles of Zimmermann, which he says "appear as if they were fragments of white corpuscles." The characteristics of neutrophile granules are recalled by his statement: "They are stained by iodine, but remain colorless in carmine solutions. We will see that these are also the characteristics of fibrin." Finally, after reviewing the phenomena that attend coagulation and exposure, by washing, of the fibrinous network, he says: "When this preparation is examined and magnified 400 to 500 diameters, the fibrinous reticulum can be seen distinctly, and is disposed in a very interesting manner. From an angular granulation, from 1 to 10 microns in diameter, very tenuous fibrils start divergingly, then subdivide, to unite with other fibrils, in order to form a delicate network. . . . The granulations which serve as centers for each diminutive fibrinous reticulum have the same microchemical properties as the fibrils." This was fully confirmed by our own study of the question. We were led to conclude, in fact, that the myosin of *rigor mortis* and the fibrin of *extra corpore* blood were similar bodies, both partly oxidized myosinogen and fibrinogen. Just as in the dead body the muscular myosinogen takes up what oxygen remains in the adrenoxin of the plasma, so does fibrin in blood removed from the body take up what oxygen there remains in that blood.

We must lay stress upon the vast importance of this fact in pathology. What is now termed "fatty degeneration" is mainly due to the accumulation, in any organic structure, of partly oxidized fibrinogen—either due to insufficiency of the adrenal system or to impairment of the nutrition of the part, through some local or peripheral obstruction to its normal bloodsupply. The extensive use of the iodides in neurology indirectly confirms this fact, for we have seen that, of all adrenal stimulants, Nature's own was the most potent. The increased activity induced by a greater production of adrenoxin caused by the remedy enhances the functions of all structures, including those of the leucoeytogenic organs. A greater number of neutrophile leucocytes and more food mean more fibrinogen, while more fibrinogen and more adrenoxin entail a gradual combustion of the so-called "fatty degeneration," which to us represents fibrinogen *plus* another organic body to which we will presently refer, *i.e.*, myelin.⁴⁸

Summarizing all these facts, it seems evident to us that:—

Neutrophile leucocytes ingest proteids and certain hydrocarbons, sugar and starch, in the digestive canal, and convert these into peptone, myosinogen, and fibrinogen granules.

Eosinophile Leucocytes.—The foregoing review applies in a great measure to the eosinophiles as to origin, as it is in these cells that L. F. Barker found iron,

⁴⁷ "Traité Technique d'Histologie," 1875.

⁴⁸ We may add that the simultaneous use of saline solution would materially assist the iodides and hasten the beneficial effects.

which metal is taken up in the intestine. Still, eosinophiles differ materially in their properties from the neutrophiles: they are not phagocytic and cannot, therefore, ingest the iron-pigment. Again, they are only acidophile, and their granules are larger. They only represent from 2 to 4 per cent. of all leucocytes in the bloodstream. While, therefore, they present a certain kinship to the neutrophiles, they differ from them in several ways.

Besides their affinity for acid dyes, the eosinophile granules show unusual affinity for oxygen. "The intensity of the oxyphile reaction of these granules," writes Kanthack and Hardy, "differs in different animals, but is always high. Thus, it is very high in the case of the granules of man." They are also characterized by so high a refractive index that they have a brilliant greenish luster: a feature easily accounted for by the presence of adrenoxin in the plasma, and the fact, recognized by Milroy and Malcolm, that they are also nucleoproteid bodies. An excess of phosphorus in the latter and the presence of the oxygen of adrenoxin in the plasma afford chemical conditions similar to those that underlie the production of phosphorescence of the photogenic organs of lightning-bugs.

The kinship between eosinophiles and neutrophiles seemed to us strengthened by at least one of the features mentioned in the above paragraph: *i.e.*, the fact that both cells were nucleoproteid bodies. A still closer relationship asserted itself, however, when the proclivity of neutrophiles to part with segments of their cell-substance, by mitosis, was taken into account. It transformed the obscure features of the problem into normal steps of a process. Thus, our inquiry showed that the neutrophiles remained the original, or parent-, cells; being phagocytic, their mission was to take up proteids and iron in the intestine and to find their way through the mesenteric and portal veins to the liver. Here, owing in part to the inordinate local temperature, probably, the division occurred. "The blind, sac-like endings of the venous capillaries seem to be particularly adapted for this purpose," wrote Böhm, Davidoff, and Huber,⁴⁹ referring to the labors of Van der Stricht and von Kostanecki, "as in them the bloodcurrent stagnates, and it is here that the greater number of bloodcells reveal mitotic figures." Gulland⁵⁰ likewise states that the eosinophile is derived from the "finely-granular acidophile" (the neutrophile).

The physiological functions of the eosinophiles then revealed themselves in a rather striking way. The only anatomical path which the neutrophiles and their daughtercells, the eosinophiles, could follow on their egress from the liver was through the hepatic veins, the inferior vena cava, the heart, and the lungs. "It is not improbable," writes H. Lenhartz,⁵¹ "that the majority of cells designated as 'alveolar epithelia' are variously altered forms of leucocytes. The protoplasm very frequently shows finely- or coarsely- granular fatty metamorphosis, and is characterized by a strongly-refractive index." Again, while expressing his belief that the positive identification of these alveolar epithelia is extremely difficult, he states that he understands thereby "the large oval or round polygonal cells, three

⁴⁹ "Text-book of Histology."

⁵⁰ *Journal of Physiology*, volume xix, 1896.

⁵¹ "Manual of Microscopy"; translated by H. T. Brooks.

to six times as large as a white corpuscle, which are found in almost every sputum. The usually large cell-body," he adds, "is *coarsely* granular."

The identity of the granules was now readily ascertained. "Hæmoglobin contains," says Foster, "in addition to the other elements usually present in *proteid* substances, a certain amount of iron; that is to say, the element iron is a distinct part of the hæmoglobin-molecule: a fact which of itself renders hæmoglobin remarkable among the chemical substances present in the animal body." The granules, we have seen, have a brilliant greenish luster: a characteristic of hæmoglobin-crystals. It thus became evident that:—

Eosinophile leucocytes elaborate hæmoglobin from the proteids, bilirubin and iron, ingested by their parent-cells, the neutrophiles. They take part in the formation of the epithelium of the pulmonary alveoli and supply the underlying plasma with hæmoglobin.

Basophile Leucocytes.—The granules of these cells differ from those already reviewed mainly in their reaction to various chemical substances. H. F. Müller,⁵² after a careful analysis, reached the conclusion that they were composed of bodies resembling fat. Kölliker,⁵³ Bizzorero,⁵⁴ Hayem,⁵⁵ and others are referred to by Stokes and Wegefarrth⁵⁶ as having also observed bodies resembling fat-granules in the blood of normal human beings. That the basophile granules are fat-like, as contended by Müller, or composed of a fat-containing body, is sustained by all available testimony.

The manner in which these cells acquired the constituents for the elaboration of their granules, when submitted to analysis, led us to conclude that the epithelial cells of the villi captured fat-globules from the intestinal contents and, if need be, converted them into neutral fats. Once within the villus, the fat-globules were taken by leucocytes to the interior of the lacteal, *i.e.*, in the lymphatic circulation, the primary abode of the basophiles. As these cells had necessarily to follow the lymphstream of the thoracic duct, an interesting feature again appeared, *i.e.*, all found their way into the left subclavian vein, thence into the superior vena cava, heart, and lungs: a repetition of what had been observed in the case of the neutrophiles and eosinophiles.

The two main characteristics of basophile granules is (1) that they are highly refractive, a feature emphasized by Müller; and (2) a marked tendency to disrupt or literally explode, especially in certain animals. In the guinea-pig and rabbit, for instance, immediate fixation by heat or absolute alcohol is necessary, the least exposure of the fluid containing them to the air being sufficient to cause their sudden disappearance. The atmospheric oxygen and phosphorus derived from the cells' nuclei are the only agents available to account for this phenomenon. In the bloodplasma they show, according to Müller and other observers, a dancing

⁵² Centralblatt für allgemeine Pathologie und pathologisches Anatomie. Bd. viii. 1896.

⁵³ "Handbuch der Gewebelehre des Menschen." 1867.

⁵⁴ "Handbuch der klinische Medicin," 1887.

⁵⁵ "Du Sang et de ses altérations anatomiques," 1889.

⁵⁶ Bulletin Johns Hopkins Hospital, December, 1897.

molecular movement: a feature which suggested to us a probable action of adrenoxin upon a compound rich in phosphorus. That these granules also contain phosphorus proved to be a recognized fact, as is shown by a remark of Professor Foster's, introduced in his review of the physiological chemistry of white corpuscles. "Next in importance to the proteids as constant constituents of the white cells," writes this distinguished physiologist, "come certain fats. Among these the most conspicuous is the complex fatty body, *lecithin*." This could only apply to the basophiles, for, as a result of their analysis of the only two other varieties of leucocyte, Milroy and Malcolm remark, the fact that "neither alcohol nor ether dissolves the granules excludes the possibility that they consist of fat or lecithin." Of the composition of this body Professor Foster says: "It is, therefore, of a remarkable nature, since, though a fat, it contains both nitrogen and phosphorus"; and he further describes it as a "conspicuous component of the brain, nerves, yolk of egg, semen, pus, white corpuscles, and the electrical organs of the ray." Indeed, an extensive analysis of the subject which it is impossible for us to reproduce here, and for which we must refer the reader to our work,⁵⁷ forcibly imposed upon us the conclusion that:—

Lecithin is the active constituent of the myelin of nerves. The axis-cylinder contains plasma, the adrenoxin of which, by combining with the lecithin, liberates nervous energy.

That the basophile leucocytes elaborate myelin, the active immanent constituent of all nervous structures, was now plain, but it was confirmed in another way. We have seen that all three varieties of leucocyte followed paths which led them to the lungs. Lenhartz, in the work to which we have referred, states that "the sputum of asthmatics contains numerous eosinophile and quite numerous *basophile* leucocytes." The granules of these he characterizes "as similar to myelin, and, occasionally, more refringent than fat." Finally, again alluding to the sputum of asthmatics, he remarks: "Here, however, the spherules show a decidedly dull appearance, resembling that seen in crushed *nerve*-substances. For this reason they were designated by Virchow as *myelin* droplets." It seemed to us, therefore, that we could confidently conclude that:—

Basophile leucocytes convert fats derived from intestinal foodstuffs into myelin granules.

The relation of leucocytes to vital and functional processes. A prominent feature of this inquiry was the presence of phosphorus in all the compounds elaborated by these cells. Both the neutrophiles and their daughtercells, the eosinophiles, were found to produce granules, the characteristics of which as nucleoproteids were unmistakable. These bodies, as is well known, are distinguished from other proteids by the presence of phosphorus. The granules of the basophiles proved to be composed of fatty bodies, but bodies also containing lecithin, a compound very rich in phosphorus. All granules derived from leucocytes, therefore, may be said to have asserted their identity as compounds in which phosphorus takes a

⁵⁷ "The Internal Secretions and the Principles of Medicine," volume i.

prominent part and which, when brought into contact with the oxygen of the plasma's adrenoxin, cannot but give rise to the production of functional energy.

How are the granules distributed? Bail⁵⁸ saw granules leave the periphery of the cell and enter the surrounding medium after diluting a centrifugalized sediment previously treated with ether. Stokes and Wegefarth⁵⁹ studied the subject with the blood of some five hundred patients. At a temperature of 35° C. the leucocytes became actively amœboid; and the granules within the neutrophiles, they say, "exhibited a characteristic activity which might be compared to the swarming of bees around a hive." The authors state that under such conditions "the number of fine granules free in the plasma is perceptibly increased." The eosinophiles showed a less vigorous motion. Gulland also states that large leucocytes show "a great tendency to leave their granules behind them." Sangree⁶⁰ saw eosinophile granules wander away from the cell oscillating very actively until lost to view. Finally Gulland, to whom we have just referred, fixed a cell dragging behind it a large number of granules. He says, in this connection: "The leucocyte was seen to have been fixed in the act of passing through a narrow hole between two bundles of connective tissue": an example of the migrating function of these cells through which they are enabled to approach the cellular elements or nerve-structures for which these granules are intended, and which they probably reach in virtue of the oscillating motion witnessed by various histologists. Here they meet the plasmatic adrenoxin.

The adrenoxin, being dissolved in the plasma, may readily penetrate not only capillaries of the greatest tenuity, the capillary networks of epithelium, for example, but our inquiry revealed that various structures, the functions of which had remained hidden, were in reality plasma-channels. We have stated that axis-cylinders of nerves proved also to be channels which served to bring the adrenoxin of the plasma into contact with myelin to produce nervous energy. This myelin was not only found to surround the axis-cylinders of all nerves, but also to line the inner surface of the dendrites of neurons and to form the ground-substance of their cell-body. The neuroglia proved to be the communicating channels between the general circulation and the neurons. This constitutes the minute circulation of the cerebrospinal axis, which, if we are not mistaken, is described in our work for the first time. The musclecells also asserted their identity as plasma-channels. "We might compare a living muscle," writes Professor Foster, "to a number of fine, transparent, membranous tubes containing bloodplasma." To this plasma we would add adrenoxin, its energizing agency, which with the phosphorus-laden compounds constituting the granules insures the continuation of the vital processes of the entire organism and the functional efficiency of all organs. This appears to us to be embodied in the following general conclusion:—

1. *Neutrophile leucocytes form:—*

Peptones, which combine with adrenoxin to sustain general metabolism, i.e., the vital process.

⁵⁸ *Berliner klinische Wochenschrift*, October 11, 1897.

⁵⁹ *Loc. cit.*

⁶⁰ *Philadelphia Medical Journal*, March 12, 1898.

Myosinogen, which combines with adrenoxin to supply contractile energy to muscles.

Fibrinogen, which combines with adrenoxin to supply heat-energy to the blood.

2. *Eosinophile leucocytes form:—*

Hæmoglobin, which loosely combines with adrenoxin to insure its storage in erythrocytes.

3. *Basophile leucocytes form:—*

Myelin, the active principle of which, lecithin, combines with adrenoxin to develop nervous energy.

THE SPLENO-PANCREATIC INTERNAL SECRETION.

The last of the internal secretions to which we will refer is well known as a pancreatic product secreted directly into the intestinal canal. It has failed to be recognized, however, as an *internal* secretion poured into the vascular system and fulfilling therein a function of the highest importance to us, physicians, that of destroying the germs of disease and their toxins.

Schiff, many years ago, concluded, after a series of experiments, that the spleen supplied a ferment which, when added to pancreatic juice, greatly increased its digestive energy. Herzen⁶¹ sustained him, contending, however, that the splenic secretion served to convert the trypsinogen of the pancreas into trypsin. This opinion was sustained by the labors of Laguesse, Lépine, Schäfer, and others. Lépine,⁶² for example, found that a mixture of pancreas and spleen-pulp in glycerin possessed far more active properties than pancreas alone similarly prepared. On the other hand, the blood of an animal deprived of its spleen proved almost inert as a tryptic, while the blood of a normal dog possessed distinct digestive powers. Our own analysis of the subject led to similar conclusions.

Still, the anatomical relations between the two organs brought us to recognize a curious feature of the function involved. There is no way by which the splenic internal secretion can reach the pancreas without first passing through the liver, the heart, the lungs, and the pancreatic branch of the celiac axis. On the other hand, as recently shown by Opie,⁶³ the islands of Langerhans in which trypsinogen is formed are three times more numerous in the splenic end of the pancreas than elsewhere. This corresponds with the region of the organ in communication with the splenic vein, while the part of the pancreas not in communication with this vessel contains no islands of Langerhans. The pancreas being connected with the splenic vein by means of several short trunks, the trypsinogen must inevitably be secreted into that vessel and there meet the splenic secretion. This normally led to the conclusion that:—

The greater part of the trypsin of the organism is formed in the splenic vein.

Indeed, Herzen's experiments show that rapid digestion of albumins occurs

⁶¹ Revue Générale des Sciences pures et appl., volume 1895.

⁶² Société des Sciences Médicales de Lyon, July, 1895.

⁶³ Johns Hopkins Hospital Bulletin, September, 1900.

in this vessel during active intestino-portal digestion. We have seen by Lépine's experiments that this would not take place were either of the two secretions absent. As the splenic vein opens into the *portal* vein, the trypsin is also carried to this vessel as fast as formed.

The action of trypsin on albuminoids is well illustrated by the following quotation from our first volume, which includes a list of toxic albuminoids as given in a work by a master in physiological chemistry, Professor Gautier, of Paris⁶⁴:—

"We thus have, as main sources of intoxication which it is the function of *trypsin* to counteract, the following agencies:—

- | | |
|---|------------------------------|
| "1. Toxins and diastases secreted by bacteria. | "3. Tissue toxalbumins. |
| "2. Diastases derived from leucocytes and glandular elements. | "4. Snake- and other venoms. |
| | "5. Vegetable toxalbumins. |
| | "6. Diastasic ferments." |

The relationship of the spleen to infection was well exemplified by the experiments of Charrin and Levaditi,⁶⁵ Zaremba,⁶⁶ and others, but those of Courmont and Duffan⁶⁷ showed that, in rabbits splenectomized from two to twenty-five days beforehand, the staphylococcus pyogenes and the bacillus pyocyaneus caused death in a few hours, whereas normal rabbits survived longer or altogether. Splenectomy, though not a fatal operation, therefore, was thus shown to increase the vulnerability to infection.

As we have seen, neutrophile leucocytes, while in the intestine, ingest proteids, sugars, starches, iron, etc., of a physiologically useful kind, but if bacteria, toxins, and other noxious agents are present they likewise inglobe or absorb them, and digest them. The important bearing of the spleno-pancreatic secretion upon the body's immunity to disease now becomes apparent, for Metchnikoff⁶⁸ writes: "Just as amœbæ digest their prey with the aid of amibodiastase, a soluble ferment belonging to the group of the trypsins, white corpuscles submit the foreign bodies they inglobe to the action of cytases. These cytases (the alexins, or complements, of other authors) are the soluble ferments which also belong to the category of the *trypsins*."

We have emphasized the fact that the neutrophile leucocytes, after ingesting foodstuffs in the intestinal canal, entered the circulation by way of the venules of the villi and then followed the mesenteric veins to the portal vein. When they reach this vessel, therefore, they are immersed in venous blood highly charged with trypsin. The spleno-pancreatic secretion thus becomes the main agency through which the organism is protected against diseases caused by germs and their toxins, since it adds to the intestinal trypsin that the cells may absorb the bulk of that

⁶⁴ "Chimie de la Cellule vivante," pages 102 *et seq.*

⁶⁵ Semaine Médicale, March 22, 1899.

⁶⁶ Archiv für Verdauungs-krankheiten, Bd. vi, Hft. 4, 1900.

⁶⁷ Société de Biologie, Lancet, June 27, 1896.

⁶⁸ "L'Immunité dans les Maladies Infectieuses," page 204, 1901.

used in the intracellular digestive process. On the whole, the following conclusions seemed to us to be sustained from every direction:—

The spleno-pancreatic internal secretion is represented by the trypsin which reaches the portal vein by way of the splenic vein, and which continues in the bloodstream the clearance processes begun in the intestinal canal.

Interpreted as a protective function of overwhelming importance, one, indeed, primarily involved in all infections (although, when considered from the standpoint of physiology, it is only incidental to the intracellular digestive process to which all proteids and albuminoids are submitted), it is also evident that:—

The main function of the spleno-pancreatic secretion, trypsin, is to protect the organism from the effects of bacteria, their toxins, and all toxic albuminoids, including vegetable poisons and venoms.

THE POSTERIOR PITUITARY BODY AS THE GENERAL CENTER OF THE NERVOUS SYSTEM.

IN THE MONTHLY CYCLOPEDIA for January we stated that the *posterior pituitary body*, far from being the insignificant vestigial organ it is generally thought to be, had been found by us, thanks mainly to the investigations of Berkley,⁶⁹ Andriezen,⁷⁰ Howell,⁷¹ and de Cyon,⁷² to stand second in importance only to its mate, the anterior pituitary body. It proved to be the *chief functional center of the nervous system*, its numerous groups of neurons forming the starting-point, or highly-specialized center, of a single class of nerves. The various medullary centers thus became mere connecting nuclei, which, stimulated or injured, however, could become the source of all the morbid phenomena recorded by physiologists. The posterior pituitary body also proved to be the center upon which all emotions, shock,—psychical or traumatic,—and kindred sources of excitement or depression reacted, impairment of its functions accounting for the pathological phenomena now ascribed to such causes. Again, *as the general center of the nervous system, it was found to be the anterior pituitary body's co-center in sustaining the cellular metabolism of all organs. While the anterior pituitary body insured oxygenation of the blood through the adrenal secretion, the posterior pituitary body adjusted and governed the functional activity of all organs through the nervous system.* The practical feature we wish to convey in this connection is the influence of the anterior pituitary body on its mate. Insufficiency of the former, by lowering the activity of cellular oxidation, depresses the functional activity of the latter. Vaso-constriction being governed by the posterior pituitary (leaving out of the question the vasodilators, which, in the light of our work, do not exist as active entities), we thus have, when insufficiency of the anterior lobe occurs, general vascular dilation. Still, can we say *general* dilation of all bloodvessels? Our analysis of this question brought out what has seemed to us to constitute another point of

⁶⁹ Johns Hopkins Hospital Reports, volume vi, page 89, 1897.

⁷⁰ Brain, Winter, 1894.

⁷¹ "Transactions of the Congress of American Physicians and Surgeons,"⁷² volume iv, page 83, 1897.

⁷² Archives de Physiologie, July, 1898.

far-reaching importance in all morbid processes in which any variation of temperature occurs, *i.e.*, the fact that the only vessels which undergo contraction through the influence of vasomotors are those supplied with a muscular coat. The effect of this anatomical feature is embodied in the following principle:—

Vessels supplied with a muscular coat and capillaries are antagonistic in contraction and dilation.

As is well known, capillaries are not supplied with a muscular coat; so that, when the vessels that are so undergo contraction, the blood in them is forced into the capillary system. Conversely, when the coated vessels dilate through relaxation of their vasomotors, the capillaries are depleted. We were thus brought to realize that:—

Fever is primarily (as regards its mechanical aspect) due to contraction of all vessels supplied with a muscular coat (especially the great central vascular trunks), the cutaneous redness and suffusion being the result of engorgement of the peripheral capillary system. It indicates overactivity of the adrenal system.

Pallor is due to dilation of all vessels supplied with a muscular coat (especially the great central vascular trunks), the cutaneous hypothermia being due to depletion of the capillary system. It indicates insufficiency of the adrenal system.

THE DUCTLESS GLANDS IN DISEASE AND THERAPEUTICS.

In the earlier portion of this paper we emphasized the fact that all toxics either stimulated the anterior pituitary body, *i.e.*, the adrenal system, or depressed it. Whether we call this toxic a toxin, a poison, or a remedy, the phenomena of adrenal overactivity or insufficiency always appear (irrespective of the specific properties which each drug or toxin shows, and which cannot be referred to here), their intensity varying with the power of the dose in the circulation. The symptoms of overstimulation are very numerous and increase as the morbid process is prolonged: thus, in the erethic stage of exophthalmic goiter many symptoms appear that are not witnessed in acute poisoning. The same may be said of adrenal insufficiency; but, when this is due to acute intoxication, the phenomena may be said to be practically similar. This is well shown by the chart already submitted in which the symptoms of cholera, arsenic poisoning, and other intoxications are compared to those that follow double adrenalectomy.

Our investigations also led us to conclude, in this connection, that the majority of drugs, toxins, physiological toxalbumins, etc., *stimulated* the adrenal system when the proportion of these agents in the blood did not exceed a certain limit, and that, when this limit was exceeded, *i.e.*, when the dose administered, or the amount of toxins secreted by bacteria, etc., was excessive, it either *inhibited* or *arrested* the functions of this system. A large dose of quinine may, for instance, cause adrenal overactivity, a flushed face, a bounding pulse, etc.; but, if the dose is excessive, it will overwhelm the adrenal system, the signs of which are always similar, *i.e.*, pallor, a weak and rapid pulse, etc. Between the two stages of adrenal overactivity and insufficiency, however, whether due to disease toxins or to poisons, there is a period corresponding, in a measure, with the normal state. This has been clinically recognized as the *crisis*.

An outline of the modifications which our investigations have suggested in the pathology and treatment of a few of the more important diseases will serve to illustrate the action of pathogenic elements upon functions of the ductless glands, and the manner in which remedies tend to offset the morbid process.

Pulmonary Tuberculosis.—The organ primarily at fault in this disease is the anterior pituitary body. Vulnerability to any disease whether inherited or acquired means insufficiency of this organ, that is to say, of the adrenal system. Reduced oxidation entails impaired metabolism and nutrition of all structures, including the heart. The lungs bear the brunt of tissue-starvation, however; the vast capillary system opposes the already weakened cardiac contractions, and the pulmonary structures do not even receive their share of the deficient blood available. Pallor, muscular weakness, a thin compressible pulse, an undeveloped or slightly dilated heart, anæmia, anorexia, coldness of the extremities, and habitual hypothermia point to this adrenal insufficiency in a large proportion of subjects. It denotes *vulnerability* to the germs of all diseases, including tuberculosis. Given such a subject with a suggestive family history, however, a course of treatment including forced nutrition, the iodides in gradually increased doses, and strychnine, adding a little digitalis if there is any cardiac dilation, will actively stimulate the adrenal system and cause the untoward symptoms slowly to disappear, along with the vulnerability. This is one of the phases of what we have termed “Immunizing Medication.”

How does infection occur in a vulnerable subject? We had occasion recently⁷³ to express views directly opposed to those advanced by Professor Koch. Since vulnerability means insufficiency of the adrenal system and lowered oxidation, the functional activity of the spleen and pancreas and the production of trypsin are correspondingly reduced. We have seen that the digestive process within the neutrophile leucocytes which collect foodstuffs in the intestinal canal is due to the action of trypsin, as shown by Metchnikoff; a deficient supply of this proteolytic ferment, therefore, reduces the efficiency of this process. The protection it affords to the general system is reduced in proportion, since *undigested* bacilli mean *pathogenic* bacilli. If we now recall the path followed by these leucocytes,—the villi, portal system, heart, and pulmonary circulation,—it will become evident that direct infection of the lungs can occur through bacilli ingested by leucocytes in the intestinal canal—precisely as may be the case in the pulmonary alveoli. *Contaminated milk and foods are, therefore, as active sources of infection as air-borne germs.*

The feature of the pathology of pulmonary tuberculosis which first claims our attention to its importance is the relationship between the adrenal system and the alkalinity of the blood. We have referred to the vast importance of sodium chloride as a factor of leucocytic functions. When we realize the part played by leucocytes in the vital processes of the entire organism, this new rôle of the adrenal system assumes proportions exceeding in importance any excepting general oxygenation which this system governs. Von Fodor⁷⁴ found that, when

⁷³ MONTHLY CYCLOPÆDIA OF PRACTICAL MEDICINE, January, 1903.

⁷⁴ Centralblatt für Bakteriologie und Parasitenkunde, volume vii, 1890.

rabbits were infected with various toxins, including those of tuberculosis, the alkalinity of the blood *rose*, but *declined* as the effects of the disease became more marked. Cantani observed the same effects under the use of diphtheria toxins; here the blood's alkalinity rose two hours after the poison had been injected, increased up to the twelfth hour, then declined. In another series of experiments performed with Rigler,⁷⁵ von Fodor observed that the intensity of the symptoms varied with the dose of toxin injected, and that, while moderate doses increased the alkalinity of the blood, very large doses caused it to decrease. Finally, injections of antitoxin were found to raise it. Stronger proof could hardly be adduced to show that the adrenal system also underlies this far-reaching vital function.

Very recently, Albert Robin,⁷⁶ of Paris, laid special stress upon what he termed "organic demineralization." He had noticed that during the *pretubercular* and during the earlier stages of the disease there occurred almost always a very marked loss of mineral salts, "causing one to wonder," he remarks, "whether this demineralization might not be one of the mysterious conditions which create the soil for a rapid pullulation of the Koch bacillus." He also refers to an investigation now in progress which he hopes will disclose the meaning of what has been termed "idiosyncrasy," and simultaneously "ascertain the practical means of overcoming it."

Both problems are met by the functions of the adrenal system as we interpret them. "Idiosyncrasy" is primarily the result of inherited or acquired insufficiency of the adrenal system. To counteract the loss of alkaline salts, the adrenal system must be judiciously stimulated, to insure their assimilation when introduced into the organism. Indeed, we view the process involved not as one in which waste of salts already in the tissues occurs, as the word "demineralization" would tend to suggest, but as a result of inadequate absorption of the salts from intestinal foods. We have stated that leucocyto-genesis was also dependent upon the oxygenation of the leucocyto-genic organs. Insufficiency of the adrenal system, therefore, entails hypoleucocytosis, and the deficiency of salts and general nutrition is mainly due to a reduction in the *number* of leucocytes supplied to the digestive canal.

In the treatment of pulmonary tuberculosis we are brought to realize that the indications are (1) actively to stimulate the adrenal system; (2) to supply alkaline salts to the organism. Besides these, of course, recourse must be had to the dietetic and hygienic measures which justly receive so much attention at the hands of clinicians nowadays. Active stimulation of the adrenal system is induced by the very agents that have acquired the confidence of the profession, particularly iodine, the iodides, creosote, ichthyol, and strychnine. But the feature we wish to emphasize is that *adrenal stimulants will often prove inadequate if the alkaline salts are not administered simultaneously, while the use of alkaline salts without adrenal stimulants will prove unavailing, though perhaps beneficial for a time.* The decinormal solution introduced intravenously affords a ready means when rapid results are to be attained, but rectal injections or hypodermoclysis

⁷⁵ Centralblatt für Bakteriologie, February 6, 1897.

⁷⁶ Bulletin Général de Thérapeutique, December 23, 1902.

may likewise be used, bearing in mind, however, that small quantities frequently repeated produce better results in chronic diseases than the large quantities required in acute ones.

Does the use of alkaline salts directly influence the destruction of bacteria and their toxins? This question is forcibly met by the fact that *trypsin will not act in the absence of salts*. Metchnikoff⁷⁷ found, we have seen, that trypsin was the active body which in the phagocytic leucocytes digested bacteria; he also ascertained that "it only acts in the presence of salts." Behring and Nissen⁷⁸ were led to conclude, by a series of experiments, that the resistance of the white rat to anthrax was due to the intense alkalinity of the blood. Paul⁷⁹ not only supported this view, but also found that, if the alkalinity of the rabbit's serum were neutralized, its germicidal powers disappeared.

Pneumonia.—The last census shows that, while the mortality of tuberculosis has diminished, that of pneumonia has greatly increased. This disease has become one of the greatest foes of humanity and has altogether baffled the efforts of science. We are not dealing with insufficiency of the adrenal system as a precursor of the disease or even as a factor of the morbid process during its most active manifestations. Indeed, the phenomena witnessed, the sharp febrile process, the flushed face, the congestive headache, etc., point to precisely the opposite condition: *i.e.*, adrenal overactivity. The rusty or blood-stained expectoration of the erethic stage is but a repetition of the hæmorrhages caused in animals by toxic doses of adrenal extract or by quinine in large, but not excessive, doses.

The time comes, however, when the crisis either inaugurates convalescence or the accumulated toxins, after stimulating the adrenal system to the utmost, gradually overpower it. This introduces the asthenic stage, that during which stimulants—adrenal stimulants—are needed. Another kind of expectoration then appears, the prune-juice expectoration: *i.e.*, sputum loaded with the same met-hæmoglobin or hæmatoporphyrin found in the blood when a viper—the *fer-de-lance* viper of Martinique, for instance—has introduced into the bloodstream of its victim a dose of venom sufficient to all but arrest the functional activity of the adrenal system and deprive the blood of the substance which holds its hæmoglobin in loose combination. All vessels supplied with a muscular coat then dilate in this stage, pallor and hypothermia and other symptoms also pointing to advanced adrenal insufficiency.

Pneumonia is regarded as a self-limited disease. Still, a large number of clinicians have advocated remedies deemed by them capable of curtailing it. Professor Osler⁸⁰ remarks, in this connection: "Certain drugs are credited with the power of reducing the intensity and shortening the duration of the attack. Among them *veratrum viride* still holds a place in doses of *mii-v* of the tincture given every two hours. Tartar emetic—a remedy which had great vogue some years ago—is now rarely employed. To a third drug, *digitalis*, has been attributed of

⁷⁷ "L'Immunité dans les Maladies Infectieuses," 1901.

⁷⁸ *Zeitschrift für Hygiene*, Bd. vii, 1890.

⁷⁹ *Proceedings of the Royal Society*, London, May 22, 1890.

⁸⁰ "Principles and Practice of Medicine," third edition, 1898.

late great power in controlling the course of the disease. Petresco gives at one time as much as from 4 to 12 grams of the powdered leaves, and claims that these colossal doses are especially efficacious in shortening the course of the disease and diminishing the mortality." Suggestive in this connection is the fact that *veratrum viride* and *tartar emetic* are essentially adrenal depressants, while "colossal" doses of *digitalis* are likewise. We have seen that pneumonia was primarily characterized by excessive adrenal overactivity; these drugs serve to inhibit the inordinate stimulation, and thus hold, as it were, the adrenal functions within safe bounds.

Still, the fact that these measures have not been generally adopted suggests that the results reached have not proved encouraging in the hands of the profession at large. True, the large doses of *digitalis* recommended have inspired fear of the "cumulative" action displayed by this drug, but this cannot be said of *veratrum viride*, and larger doses than those mentioned above have been given every two hours and even more frequently to adults without untoward effect, by many clinicians, who, *without exception*, insist upon its employment during the first stage. Its adoption would have been general, in our opinion, if an important feature of the pathology of the disease had been recognized, *i.e.*, the rapid exhaustion of alkaline salts by the enormous number of leucocytes which invade the lungs of the patient during the first stage.

Osler refers to saline injections used hypodermically in the following terms: "I have seen it do good in helping to tide over a critical period of cardiac depression. As much as a couple of pints may be allowed to run beneath the skin by gravity, etc." F. P. Henry, who first used hypodermoclysis in pneumonia, writes⁸¹: "The surest method of conveying water to the tissues is by subcutaneous injections of (deci-) normal saline solution: a solution of common salt of the strength of 50 grains to a pint." Referring to the worst types of lobar pneumonia met with,—*i.e.*, those that occur in drunkards, alcoholic intoxication, exposure, and a debilitated adrenal system incident upon the alcohol habit, concurring to place the patient on the brink of death almost from the start,—he remarks: "Such cases treated by ordinary methods terminate, as a rule, with few exceptions, in death. Such cases treated with hypodermoclysis terminate, as a rule, in recovery." Still, ten years have passed since this was written, and the method has not been generally adopted. In the light of our views, two reasons are available to account for this: 1. Hypodermoclysis has been used too late, and altogether too infrequently to compensate for the rapid consumption of alkaline salts incident upon the excessive hyperleucocytosis. 2. An inhibiting influence, such as that possessed by *veratrum viride* over the adrenal system, is required to reduce the hyperleucocytosis. The main indications suggested, therefore, when the adrenal system and the hyperleucocytosis are taken into account, are as follows:—

1. Tincture of *veratrum viride* in sufficient doses (2 to 5 minims), repeated every two hours to reduce and soften the pulse, and lower the temperature.
2. The introduction of at least $\frac{1}{2}$ ounce of sodium chloride into the organ-

⁸¹ "System of Therapeutics," by H. A. Hare, first edition, volume ii, page 290, 1892.

ism in the twenty-four hours, either by repeated hypodermoclysis or intravenous injections.

Enemata of salt solution, or of the physiological salt solution are considered by some authors as effective as the more direct methods, but the rapid action which the latter insure is of vital importance in the first stage of pneumonia. This treatment should be instituted from the start, and, if carried on faithfully, should lower the mortality very materially, since it fulfills conditions which Petresco's enormous doses of digitalis do not meet. Notwithstanding this his mortality was only slightly above 2 per cent., as against the 15 to 25 per cent. afforded by prevailing methods of treatment.

Veratrum viride is thought to be a dangerous remedy. H. C. Wood⁸² refers to it in the following words: "Although veratrum viride is a remedy of great power, capable of producing the most alarming symptoms, yet it is the safest of the cardiac depressants. Overdoses of it provoke vomiting so soon and so certainly that it is somewhat doubtful whether a robust adult could be killed by a single dose of any of its official preparations." The toxicology of the drug distinctly points to the class in which it may prove lethal, *i.e.*, in the debilitated and in infancy and in the stage of asthenia of any disease. The adrenal system of feeble subjects is already insufficient; in infancy and early childhood the adrenal system is too inadequately developed to protect the organism. Again, fear has been expressed that the injection of saline solution might cause cardiac arrest by overloading the circulation. The recent experiments of J. B. Briggs⁸³ have demonstrated that hypodermoclysis produces no increase of vascular pressure whatever; while those of Sollmann⁸⁴ have shown that the introduction of even large quantities of saline solution into the veins was accompanied with the rapid escape of bloodfluids into the perivascular space, thus preventing the undue back-pressure thought to occur upon the heart-muscle. This accounts for the copious diuresis that follows these injections, a potent aid in the curative process, since it greatly increases the elimination of toxic elements.

THE PATHOLOGY OF FEVER AND THE PRESERVATION OF LIFE DURING FEBRILE PROCESSES.

We would not close these remarks upon the treatment of pneumonia without laying stress upon the fact that it is the *only* disease in which, in the light of our investigations, the febrile process is at all harmful and requires to be controlled. If any one feature has been affirmed by our labors, it is the fact that *fever is essentially a protective phenomenon*, the purpose being to force all pathogenic elements into the capillary system and there to expose them to the combined destructive action of the phagocytes and trypsin. The mechanical action involved is the one to which we have already referred, *i.e.*, contraction of all vessels supplied with a muscular coat, especially the larger central trunks, as soon as a toxic in the blood stimulates the anterior pituitary body. The capillaries, being

⁸² "Therapeutics: its Principles and Practice," eleventh edition, 1900.

⁸³ Johns Hopkins Hospital Bulletin, February, 1903.

⁸⁴ Archiv für exper. Pathologie und Pharmacie, Bd. xlv, 1901.

deprived of such a coat, are the seat of engorgement until the center of the adrenal system is no longer stimulated: *i.e.*, when the pathogenic elements in the blood have been destroyed.

The *manner* in which pathogenic elements are destroyed was brought out by our study of immunity. Trypsin, to assume the proteolytic properties, requires a temperature somewhat higher than that of the surface of our body. In leucocytes this is supplied by the action of the oxidizing substance upon the phosphorus-laden lecithin of the nuclein—provided alkaline salts are available. During the febrile process the plasma in the capillaries contains not only trypsin, but two other agents, adrenoxin and fibrinogen. As fibrinogen contains phosphorus, and adrenoxin is an oxygen compound, we have (provided the plasma be supplied with alkaline salts) a repetition of the process that occurs during the intracellular digestive function. It is evident, therefore, that *to administer antipyretics is to defeat Nature's effort to relieve the organism of pathogenic elements.*

We are afforded, in this connection, further evidence of the importance of alkaline salts during disease. Indeed, as interpreted from our standpoint, the absence of these salts represents the main cause of death during febrile processes. During health the sodium chloride needed by the organism is ingested with the food, both as a condiment and as a constituent of meats, vegetables, etc.; the alkaline phosphates and the sulphates likewise form part of our diet, the latter salts being obtained from most drinking-waters. As to the alkaline carbonates, they are products of dissociation of acids ingested with vegetables and fruits. All the alkaline salts referred to are thus ingested with foods or beverages. During disease, on the other hand, anorexia, the restricted or modified diet, etc., involve, if anything, a marked reduction in the amount of alkaline salts ingested. It thus becomes evident that a morbid cycle exists, in this connection, pernicious in the extreme to the welfare of the patient in febrile disorders, because, the source of these salts being *external to the organism*, the latter is possessed of no intrinsic reserve. *Steadily, as the febrile process advances, the alkaline salts are consumed, and, being inadequately renewed, the vital and defensive functions are increasingly hampered until life ceases.*

This applies not only to the diseases recognized as "fevers," but to intoxications, including uræmia, puerperal eclampsia, and other disorders, during which, as is well known, patients deemed to be *in extremis* have been practically resuscitated by the use of alkaline solution. But at times even this fails. The data submitted in the foregoing pages seem to us to account for this if they have adequately sustained the general conclusion that:—

The power of the organism to antagonize the constitutional effects of pathogenic germs, their toxins, and other poisons is directly proportionate, all else being equal, to the functional efficiency of the adrenal system.

As this applies to the entire field of general diseases, it follows that:—

When a favorable reaction does not follow the use of saline solution, it is because the adrenal system also requires direct stimulation, such as that afforded by strychnine, digitalis, etc., administered subcutaneously.

The strength of the first deduction is illustrated by the manner in which the teachings of clinical experience are sustained. Thus, cholera Asiatica, which proves to be the symptom-complex of acute insufficiency of the adrenal system due to the effects of cholera toxins upon the anterior pituitary, is only benefited, we know, by active stimulation, heat, etc.

Syphilis is likewise a manifestation of adrenal insufficiency. Here, however, it proved to be of gradual development, the terminal stages being attended with actual death of circumscribed areas of the peripheral tissues: those, indeed, most liable to succumb to denutrition. In "secondary" syphilis, a powerful stimulant of the adrenal system, mercury, is efficacious; later on, in the "tertiary" form, a still more powerful agent is required: *i.e.*, Nature's own stimulant, iodine.

The words "gradual development" suggest a series of diseases in which, however, the clinical evidence, based on the teachings of but one investigator, is sustained as against the prevailing opinions of the clinicians of all other countries. This investigator, Professor Baccelli, of Rome, and his followers report a mortality of less than 3 per cent. in tetanus, as against the 50 to 70 per cent. recorded elsewhere. Baccelli's low mortality is accounted for by our views: *The 2-per-cent. solution of carbolic acid he injects stimulates the insufficient adrenal system.* We recently⁸⁵ called attention to the fact that in a certain class of diseases, tetanus, epilepsy, hydrophobia, puerperal septicæmia, and kindred disorders, symptomatic treatment could prove harmful. We then wrote: "In tetanus, for example, the convulsions normally suggest the use of cannabis Indica, the bromides, etc., as sedatives or depressomotors. In the light of our views, precisely the opposite course is indicated, *i.e.*, active stimulation of the adrenal system, because *the convulsions are not due to the tetanus toxins, but to accumulated waste-products.* Indeed, the effect of this toxin is gradually to reduce the efficiency of the adrenal system and of all oxidation processes accordingly. The present mortality sustains us, especially when compared with the results of Baccelli's carbolic-acid treatment. As interpreted from our standpoint, this agent powerfully stimulates the adrenal system, and simultaneously causes prompt oxidation of the waste-products. Baccelli, we know, saves almost all of his cases. The same may be said of hydrophobia; here, again, the method of treatment employed in the various Pasteur Institutes insures precisely what Baccelli does with the aid of carbolic acid: in suitable doses, the extract of desiccated cord injected raises the anterior pituitary body's functions to their normal standard and sustains them until all danger is past." We may now add that, in the light of our views, Dr. Barrows, of New York,⁸⁶ saved his recent case of puerperal septicæmia because his weak formaldehyde solution was just strong enough to stimulate his patient's inadequate adrenal system, but not strong enough to overwhelm it.

In closing, we wish to state that, since the functions of the ductless glands and of the leucocytes have been known to us, medicine has appeared in a new light. The majority of abstruse problems have become normal combinations, bereft, as they now are, of theories which before were necessary to compensate

⁸⁵ MONTHLY CYCLOPEDIA OF PRACTICAL MEDICINE, January, 1903.

⁸⁶ New York Medical Journal, January 31, 1903.

for the functions of the organs we have described. Though our labors are by no means finished (the second volume will only appear in some months), what has already been done has demonstrated that there is available, even now, hidden in the annals of medicine,—the product of hosts of patient investigators in all civilized countries,—enough sound literature and experimental evidence to place medicine on a footing with any branch of applied science, which means to our profession the mastery of the greatest foes of mankind.

Whether the views embodied in this paper will contribute to this end remains to be seen.

Commentary.—We can only add that we have found it impossible to give, in the above paper, more than a mere outline of some of the subjects treated in the first volume of our work, and a few of those that are to appear in the second. The first part of the article, for instance, contains, in a few pages, what in the work is treated in over 350. The data given in the paper, therefore, are in no way intended to portray the evidence submitted in support of the conclusions reached.

When the paper was read before the Philadelphia County Medical Society the discussion was omitted owing to the lateness of the hour reached. We were unable, therefore, to refer to a feature of considerable importance, viz.: the spirit with which we would receive adverse criticism should our labors prove sufficiently interesting to merit the attention of other investigators.

The main object of the labors referred to has been to contribute to the elimination of the multitude of theories which now befog Medicine. A large number of experimental, pathological, and clinical *facts* having imposed upon us, so to say, the recognition of the newer functions described, they are not submitted as hypothetical propositions, but as solutions of various problems the factors of which were deemed scientifically sound. Still, though concordant,—a good omen,—they may prove to be erroneous. Close scrutiny of each question by many investigators can alone decide whether they are or not. Having no theory to defend, we can only hail with satisfaction any contribution which, supported by *facts*, will point to flaws and eradicate them, since this can only contribute to an end we all have in view: the elevation of Medicine to the high rank it must eventually occupy in science, and enhance its usefulness in the mitigation of suffering.

GANGRENOUS DESTRUCTION OF THE PITUITARY BODY, WITH DIS-INTEGRATION OF THE BLOOD, FOLLOWING A FRACTURE OF THE SPHENOID BONE AND SUBSEQUENT INFECTION.

DR. EUGENE WASDIN, Surgeon in the Marine-Hospital Service, was led by the "Summary of Contents" of our work published in the January issue of THE MONTHLY CYCLOPÆDIA OF PRACTICAL MEDICINE to report the case referred to in the above title in the *Philadelphia Medical Journal* of March 7th. Want of space renders it impracticable to report the case *in extenso*, but through Dr. Wasdin's kindness we are able to present the following summary of this remarkable instance "of the influence," using his own words, "which the integrity of the pituitary body exercises upon the integrity of the blood through the adrenal glands":—

"The patient, when admitted, had a compound fracture of the left inferior maxilla; the line of fracture extended from the angle to the base of the last molar, the mucosa being torn into buccal cavity. Antisepsis was employed, tube-feeding resorted to, and a four-tailed bandage applied. Owing to the bandage, he complained early of headache. Careful examination gave no nasal or aural signs of basic fracture. On the third day I made a counter-incision at the angle of the jaw to evacuate pus, and found the soft parts about the fracture greenish and foul. There was slight rise of temperature. By the seventh day a small, red spot appeared over the left infra-orbital canal, and was apprehended as antral invasion, but the most careful examination failed to show such a condition. In a day or two ichthyol dissipated this erythematous plaque. At this time *bronzing* of the skin appeared.

"The patient always complained of a 'little headache,' but was up and smoking. The fracture was clean and sweet. At the end of the second week the skin was quite yellow, the temperature ranged higher, and there also appeared on the right infra-orbital margin a bright-red, inflamed spot, which quickly spread to the entire right face; conjunctiva became oedematous. There was no longer a question of basic fracture with passage of infection along the ethmoid into the right orbital cavity, or that the left infra-orbital plaque had been due to the same cause. The liver was carefully examined and found normal; the jaundice was evidently hæmatogenous. Blood-plants at the end of the second week and during the third in air and in hydrogen gave *no results*: there was no bacteræmia. During the third week jaundice became extreme and the temperature mounted to 104° F. There was exophthalmos of right side and great facial swelling. Death occurred on the twenty-first day. I could only attribute the symptoms to intoxication from some virulent colony at the base of the brain, although the characteristic basilar symptoms were entirely wanting. I had to assent that I was nonplussed to some degree, to my assistants.

"The autopsy gave an extreme jaundice of body, with large and small blood-extravasations in the skin. The liver and spleen were normal; heart and lungs normal. Cultures on bouillon and agar-agar grown in air and in hydrogen gave no bacteria in the heart's blood or organs after seven days. The calvarium when removed gave no signs of cerebral involvement. At the base, the removed brain

showed gangrene of the contents of the sella turcica; the pituitary body was soft and destroyed, the line of gangrene extending on the right into the right optic fossa. Cultures from the pituitary mass gave a bacillus which did not grow in hydrogen, but slowly in mid-air. From the presence of gangrene in the broken-jaw tissues I concluded that the organisms had advanced from the jaw, along the inferior dental canal (?), and thus infected the tissues of the fractured sphenoid. But I could not realize that the toxins from so small a colony as that found in the limited gangrene in the sella turcica could produce so intense a blood-disintegration as this. I affirmed my inability to explain the symptom-complex on the basis of our (*then*) knowledge. Your article has cleared it up for us entirely: *A pituitary destruction resulting in adrenal insufficiency, blood-disorganization, and death without regard to toxins.*"

Commentary.—Dr. Wasdin's case affords evidence of the functional relationship between the pituitary body and the circulation which, to us at least, seems convincing. The presence of *bronzing* as a result of the lesion of the pituitary body points to the connection between this organ and the adrenals, and to their functional kinship. The anterior pituitary was evidently able to continue its functions for a time notwithstanding its partial destruction; but its vascular supply having been reduced, its nutrition gradually failed and necrosis followed. In the history of the case are depicted the concomitant phenomena of adrenal origin which, in the light of our views, we would be led to expect. Indeed, this extends to the leucocytic granules, which, *when the adrenoxin is deficient* are either retained by their carriers, the leucocytes, or by accumulating in the blood, are more easily seen microscopically. In the original report of his case, Dr. Wasdin refers to lymphocytes (young leucocytes) and their granules, in the following words: "In the cover examination there had been at all times observed a number of small, round hyaline bodies of a delicate greenish tint and containing granules exhibiting motion. These bodies were familiar to me as those seen in the fluids of inflamed joints and bursæ, caused by the gonococcus, and which Gaylord has found so freely in cancers and in the blood of cachectics, and which recently a commission of the Public Health and Marine-Hospital Service has encountered freely in the blood of yellow-fever subjects, to the extent that it accepted them as a possible cause of the disease. Guiteras, Gaylord, Lyon, and myself have found them in a number of diseases, but they are undoubtedly more numerous in the acute infections, and I find that Salmon described them in 1880, and that Sternberg observed them in yellow-fever blood. From their increasing presence in the blood in this case I assumed that the disintegration of the blood, as shown by the intense hæmatogenous jaundice, was due to some virulent colonization at the base of the brain, bearing in mind Flexner's observation that there may be developed among the toxins an endotheliolysine which could give rise to these bodies, through its influ-

ence upon the endothelium of the vessels, just as I had observed these hyaline bodies to be produced from the disintegration of the endothelium of the joints in localized gonorrhœa, some of my dependent drop preparations showing the irregular cells filled with them." The morphological and bio-chemical kinship between leucocytes and endothelial cells is sufficiently established to warrant the inclusion of the latter among the granule-secreting elements and to sustain Flexner's observation, if it is interpreted from the standpoint of our views.

Could we expect *all* local disorders of the pituitary body to give rise to symptoms similar to those recorded by Dr. Wasdin? Our study of this question has shown that tumors of the organ, a local hypertrophic process, etc., can become the source, in accord with prevailing views, of manifestations which vary greatly with the nature of the lesion. The symptom-complex of acromegaly may appear or mere signs of pressure of the enlarged organ upon neighboring structures, especially the optic chiasma and tracts occur. Mental disorder may accompany the latter or not. Combinations, including pressure-symptoms, mental phenomena, and any one or more peripheral manifestations, may follow. In the light of our views these limits may be greatly extended, and local lesions may give rise to syndromes as varied as the functions of *both* pituitaries are multiple. Indeed, it is probable that a case presenting the physiological symptoms in all their purity, such as that of Dr. Wasdin, could hardly be duplicated in literature.

The numerous cases of acromegaly and tumor of the pituitary body already recorded clearly suggest that, as is the case with the adrenals, the functions of the organ continue a long while, notwithstanding the considerable destruction or disorganization that a local or adjacent disease may entail. Removal of one adrenal does not seem to influence markedly the physiological functions of the adrenal system. Removal of nine-tenths of both organs does not cause death, though further destruction, as shown by Gourfein, causes symptoms of adrenalectomy to appear. The analysis of one hundred cases of hæmorrhage into the adrenals submitted in our work "The Internal Secretions and the Principles of Medicine" sustains this deduction. Briefly, the adrenals, owing to their important functions in the economy, are supplied with abundant reserve. That the organ which governs both adrenals, the anterior pituitary body, is likewise supplied with a liberal surplus of functional elements, was shown by our analysis of the local morbid processes to which it is liable.

C. E. DE M. S.

Cyclopædia of Current literature.

ALOPECIA, PHOSPHORUS IN.

Phosphorus in small doses has been found useful by the writer, especially in alopecia areata. The loss of hair ceases as soon as the treatment is begun, and the bald patches gradually become narrower. The following formula is used:—

R. Phosphori, 0.06 gram.

Fiat sol. in ol. olivæ q. s. et adde:—

Ac. arsen., 0.1 gram.

Excip., q. s.

Misce et fiat pil. No. cxx.

One pill is to be taken daily for two months, followed by an intermission of one week until three hundred pills are taken. This usually suffices to cure an average case. Rostvotzeff (*Medizinskoje Obozrenije*, vol. lvii, No. 9, 1902).

APPENDICITIS, DISCREPANCY BETWEEN CLINICAL MANIFESTATIONS AND PATHOLOGICAL FINDINGS IN.

We must not depend too much upon finding the so-called classical symptoms of the disease. It is evident that they are not always unfolded so that a positive diagnosis can be made early. We are not to be misled by apparently mild constitutional manifestations. Local signs are to be regarded as more significant, and can be relied upon to a greater degree than can constitutional manifestations. The persistence and, most assuredly, the aggravation of any manifestation is to be viewed with alarm, and strongly suggests progression of the disease. The diagnosis of catarrhal appendicitis, because of the apparently mild symptoms presented, is often unwarranted. The restriction of

the inflammatory process to the mucous surface of the appendix without ulcerative destruction thereof at any point is probably of infrequent occurrence. True conservatism, if by that we mean the conservation of life, is along surgical, and not medical, lines in every case of progressing appendicitis. Every case in which the diagnosis of appendicitis can with positiveness be made demands surgical rather than medical care. It is simply a question as to when the surgical operation should be performed. As a rule, the early operation affords the most encouraging prognosis. Nathan Jacobson (*Medical News*, Feb. 28, 1903).

ASTIGMATISM CURED BY OPERATION.

A case is reported by Dr. Bull, of Paris, in which a complete tenotomy of the external rectus for the correction of an exophoria produced the unexpected result of curing a progressive myopic astigmatism against the rule, or, as Dr. Bull prefers to call it, "inverse" astigmatism, where the greatest curvature, of the cornea is in the horizontal meridian. If this astigmatism has been measured by the retinoscope alone, the relief obtained might reasonably have been ascribed to relaxation of an irregular spasm of the ciliary muscle, particularly as the degree of astigmatism appeared to be inconstant, but the ophthalmometer showed that the astigmatism was produced by the difference in the curvatures of the vertical and horizontal meridians of the cornea. Three days after the operation the ophthalmometer showed that this difference in the curvatures of the two meridians of the cornea had disappeared, while at the

same time the subjective astigmatism had gone and the vision of the eye had risen to normal. Because of this record the astigmatism and poor vision before the operation cannot be ascribed to hysteria any more than to ciliary spasm, and the conclusion is necessary that some corneas have their form easily influenced by the tension of the external ocular muscles. A corollary to this is that when a surgeon has to deal with such a cornea he may be able, not only to cure an astigmatism by an operation on these muscles, but also to produce an astigmatism or increase one already present by an incautious interference.

Dr. Bull's observation opens the way to investigations which may prove of essential service in some obscure conditions. If an etiological connection between progressive astigmatism, or the position and relative tension of the ocular muscles, and glaucoma can finally be demonstrated, he will be entitled to the credit at least of having made the first suggestion, and it is to be hoped that the results of the investigations he purposes to make may be as brilliant as the result he obtained from the operation he has described. At the same time it is to be hoped that this operation will be tried conservatively and its limitations clearly defined before it is brought into general use, for "such an operation for the cure of astigmatism should be undertaken only in very exceptional cases," while the damage which may be done by incautious or unskilled interference with the muscles of the eye has been demonstrated to be very great. Editorial (New York Medical Journal, Feb. 7, 1903).

CLINICAL THERMOMETER, ANTISEPSIS OF THE.

The practical methods of eliminating

transmission of disease by thermometer are: A separate instrument for each patient; the hospital method of keeping the thermometer immersed in antiseptic solution, when not in use; keeping in the thermometer case a solution of bichloride and alcohol (1-5000 to 1-2000 W. H. Devine (Boston Medical and Surgical Journal, Feb. 12, 1903).

CRANIOTOMY.

Craniotomy is clearly indicated in three conditions: (1) in a non-viable child when the mother's life is in the balance; (2) in dealing with a monstrosity; (3) when the fœtus is larger than the parturient canal and is dead when the physician first sees the patient. In craniotomy the combined reports of such men as Leopold, Zweifel, Fehling, Potocki, and others show a maternal mortality of 8.1 per cent. In the hands of the general practitioner the mortality would probably reach 35 per cent. through lack of cleanliness. The mortality in operations in skillful hands and selected cases ought to be *nil*. In statistics reported by Barnes, symphysiotomy gives a maternal mortality of 10.8 per cent. and a fœtal mortality of 14.5 per cent. For Cæsarean section Leopold, Olshausen, and others show less than 10 per cent. of deaths. The operation of craniotomy will shortly never be performed on the living child. J. D. Voorhees (American Journal of Obstetrics, Dec., 1902).

EPILEPSY.

The lesion is a general one affecting the entire cortex; it involves most extensively the cells of the second, or so-called pyramidal layer, type, the cells which present a relatively larger surface exposure to the circulating poison in proportion to their volume than the

larger pyramids: the presence of a marked neuroglia proliferation; the changes in the cell are quite analogous to those definitely known to be caused by toxic agents, as furfurol, alcohol, and the tetanus bacillus and its toxins. Regarding the nature of the lesion, the authors have examined the cortex in 21 cases from the Craig colony. The same lesions were uniformly found present in all. The evidences of cortical degenerations were general. The expression of acute and chronic exhaustion was shown in a diffuse chromatolysis and other characteristic protoplasmic changes. The manifestation of a vital intoxication of the cell was presented in a swollen nucleus, a destruction of the nuclear membrane and intranuclear network, and, finally, an abstraction of the nucleolus was rendered easily possible by the knife, it behaving as a loose body in the nucleus. Contributory evidence of the ultimate disappearance of the cell from the cortex was manifest in an infiltration of the cortex with leucocytes and a progressive gliosis. From the nature of the lesion they infer that epilepsy is a highly sensory motor reflex phenomenon. L. P. Clark and T. P. Prout (Medical Record, Feb. 14, 1903).

HEROIN IN PÆDIATRICS.

Heroin is a non-irritating remedy, the only untoward symptom ever met with by the author being vertigo of a transitory character. Its dose should be limited to that ordinarily given by him, namely: $\frac{1}{240}$ grain, to a child one year old. It possesses antispasmodic properties more potent than the bromides and the belladonna group of remedies. It is a sedative to all mucous membranes, but particularly to the mucous membrane of the respiratory and genito-urinary apparatus. It soothes irritation

and allays congestion. It diminishes peristaltic hyperactivity and hypersecretion of the intestine. Heroin is rapidly absorbed by the rectal mucous membrane when previously washed free from faecal accumulations, exerting in this manner of administration its usual influence. The dose per rectum should be double the dose per mouth. This drug is completely oxidized in the system and produces no cumulative symptoms. Heroin hydrochloride is preferable to the alkaloid itself, because it is readily soluble in all vehicles and more rapidly absorbed. Heroin is not adapted for mixtures or for hypodermic use, because of its insolubility. Heroin hydrochloride is compatible with the expectorants and with the other antispasmodic, analgesic, and sedative remedies. N. G. Price (Philadelphia Medical Journal, Feb. 14, 1903).

LEUCOCYTE-COUNT IN DISEASES OF THE FEMALE GENITALIA, VALUE OF.

After reporting in detail the case-histories of 23 women with various affections of the genitalia, the author concludes that the leucocyte-count is of great value in the diagnosis of disease of the female genitalia, since a constant leucocytosis of over 16,000 denotes a suppurative process. If the purulent collection has existed some time, this amount gradually decreases, yet remains high until operative interference evacuates the pus. In cases of very long-standing suppuration, the leucocyte-count may be normal. Besides, a low leucocyte-count, when the condition has existed but a very short time, completely excludes the possibility of a suppurative process being present. Arthur Weiss (Wiener klinische Wochenschrift, Jan. 15, 1903).

MORPHINISM, HYOSCINE IN.

No remedy for any disease fills an indication more perfectly or gives better results than does hyoscyne in the treatment of morphinism. The gradual reduction method of treating morphinism should be discarded as useless and even hurtful; the sudden withdrawal, without some agent to relieve the patient's suffering, is inhumane and dangerous. This leaves the rapid reduction as the only one of the old methods worthy of consideration, but in this the patient suffers so intensely and the result is so seldom a cure that it certainly cannot be regarded as a satisfactory or successful treatment.

The painful symptoms attendant upon the abrupt withdrawal of morphine have a natural limit of a few days' duration. By the use of hyoscyne these days may be passed in comfort, and the patient enabled to escape the nerve-strain and shock that would necessarily have attended such an ordeal of suffering. In the opinion of the author, hyoscyne not only occupies, but fills, when properly used, as important a place in the treatment of morphinism as does chloroform or ether in the practice of surgery. Its office is very similar to theirs. It saves the patient from indescribable suffering and renders the unsafe, impracticable, and difficult, safe, practicable, and easy.

In a series of nearly 400 cases, in which the writer has used this remedy, he states that only in two or three cases has delirium or delusions of any kind been present as long as forty-eight hours after the last dose. Probably, in one case out of ten, such symptoms continue twenty-four hours after the last dose, but in fully 90 per cent. of the cases the mind was perfectly clear by the twelfth hour or earlier, and remained so

thereafter. In many cases the delirium subsides by the fourth to sixth hour after the last dose. G. E. Pettey (*Medical News*, Feb. 28, 1903).

NORMAL SALT SOLUTION INJECTIONS.

Normal salt solution injections, both intravenous and subcutaneous, were first used after hæmorrhage, then for treating the intoxications and infectious diseases. Following these injections the general condition of the patient improves, the heart's action becomes quieter, the erythrocytes multiply more rapidly, and arterial pressure increases. Most important are the facts that the circulating poison is diminished and rapidly eliminated, especially through the kidneys, by increasing diuresis. In uræmia, even though diuresis does not follow, the effect of the injection is also good. By experiment the author found that the effect was excellent in various forms of poisoning. Clinical experience confirmed these results. In septic conditions, uræmia, and severe anæmia the results in cases reported were also excellent. Here, too, the effect is due to diluting the circulating poison. W. Ecklentz (*Philadelphia Medical Journal*, from *Die Therapie der Gegenwart*, Jan., 1903).

PERTUSSIS, TREATMENT OF.

Local applications of the following solution are highly recommended by the author:—

- R Cryst. carbolic acid, 15 grains.
- Sol. cocaine hydrochlorate (2 per cent.), 80 minims.
- Glycerin, 4 drachms.

The preparation is especially effective in reducing the frequency of paroxysms of coughing, and should be brushed over the pharynx between or before the

accesses. Guida (Bulletin Général de Thérapeutique, No. 18, 1902).

PLAGUE, THE TRANSMISSION OF, BY FLEAS.

The writer is convinced, after a series of experiments, that these insects transmit plague from rat to rat. The disease was not transmitted by the cadavers of diseased rats, while fleas taken from a living infected animal caused plague in nine out of ten rats. The fleas of these animals were also found to bite human beings, and the author, therefore, concludes that the connection between the presence of rats in an infected district and the sufferers from plague is represented by these insects. Gauthier (Bulletin de l'Académie de Médecine, Dec. 16, 1902).

PNEUMONIA, HYPODERMOCLYSIS IN.

In a general review of the treatment of this disease, the author refers to the advantages of saline hypodermoclysis. In the spring of 1889 he had treated successfully, at the Philadelphia Hospital, several severe, apparently desperate, cases of lobar pneumonia by a method which he is confident has often turned the scale in favor of recovery, viz.: hypodermoclysis. His experience with it is amply sufficient to warrant him in recommending it strongly in the cases in question. The fluid injected beneath the skin was the "normal saline" solution (about 50 grains of sodium chloride to the pint of water), and he was induced to employ it by the apparent deficiency of water in the system, the absence of chlorides in the urine, and the universally recognized condition of hyperinosis. A series of cases illustrating this method of treatment was published by him in the "International Clinics," volume iv, ninth

series. Hypodermoclysis, he states, is now recognized by the highest authorities as, to say the least, a rational procedure in the treatment of pneumonia, and questions as to priority in its employment have already arisen. They have been definitely settled in an editorial in the Medical News for July 6, 1901, in which the history of the subject is reviewed. The statement has been made that hypodermoclysis alone may be harmful by overloading the right heart, and that it should, therefore, be combined with blood-letting. This is deemed by the writer a mere *ipse dixit* insusceptible of proof, as is also the statement that the patient is rendered much more susceptible to the influence of oxygen by the hypodermoclysis, "especially if the oxygen be passed through a wash-bottle containing hot water to which has been added a teaspoonful of a mixture of creosote and turpentine, each, 1 part, and compound tincture of benzoin, 2 parts"!

The writer contends that it is in the highest degree improbable that the bloodpressure can be materially raised by the gradual absorption of a pint of salt-water injected beneath the skin, especially in a disease in which all the signs point to a deficiency of water in the blood, and he quotes in this connection the following passage from Landois and Stirling: "If the normal quantity of blood be increased 83 per cent., no abnormal condition occurs, because the bloodpressure is not permanently raised." F. P. Henry (Philadelphia Medical Journal, Feb. 14, 1903).

RETINAL HÆMORRHAGES IN THE DIAGNOSIS OF GENERAL ARTERIAL DEGENERATION.

Retinal hæmorrhages, associated with high arterial tension and accompanied

by transitory albuminuria, are significant of beginning widespread arterial degeneration. In those cases of so-called physiological or transitory albuminuria, occurring in active, healthy young businessmen or students, in those who are working under forced pressure, ophthalmoscopical examination should be made for retinal hæmorrhages. When retinal hæmorrhages occur without albuminuria, the patient should be kept under observation, the urine be examined from time to time and the quantity passed noted. In case of finding these conditions, it is our duty to warn the patient of his condition. H. C. Haden (*Philadelphia Medical Journal*, Feb. 21, 1903).

SINUSES. TRANSILLUMINATION OF.

The writer states that to do satisfactory work it is necessary to have lamps of much greater candle-power than those usually sold by instrument dealers.

The accessory sinuses are rarely found dark on transillumination during the early stages of acute coryza.

During the later stages of a prolonged attack it is the usual result to find one or more of them dark. Hemicrania is often closely associated with antrum disease. It is almost the rule to find one or more of the nasal accessory sinuses involved when the ears are affected during acute coryza. C. M. Cobb (*Journal of the American Medical Association*, Feb. 28, 1903).

one thirty-sixth of the city's population, had over one-seventh of all the deaths from this disease. The concentration of the epidemic in this locality could not be explained by contamination of the drinking-water or of food, or on the ground of ignorance and poverty of the inhabitants, for the nineteenth ward does not differ in these respects from several other parts of the city. An investigation of the sanitary conditions of this region showed that many of the street-sewers were too small, and that only 48 per cent. of the houses had sanitary plumbing. Of the remaining 52 per cent., 7 per cent. had defective plumbing, 22 per cent. waterclosets with intermittent watersupply, 11 per cent. had privies connected with the sewer, but without watersupply, and 12 per cent. had privies with no sewer-connection. The streets in which the sanitary arrangements were worst had the largest number of cases of typhoid fever during this epidemic, irrespective of the poverty of the inhabitants.

Flies caught in two undrained privies, on the fences of two yards, on the walls of two houses, and in the room of a typhoid patient were used to inoculate eighteen tubes, and from five of these tubes the typhoid bacillus was isolated. When the discharges from typhoid patients are left exposed in privies or yards, flies may be an important agent in the dissemination of the typhoid infection. Alice Hamilton (*Journal of the American Medical Association*, Feb. 28, 1903).

TYPHOID, THE FLY AS A CARRIER OF.

The epidemic of typhoid fever in Chicago during July, August, September, and October of 1902 was most severe in the nineteenth ward, which, with

URIC ACID AND THE URATES, MEANING OF.

There is no connection whatever between the production of urea and of uric acid; hence interdiction and marked

limitation of animal and nitrogenous foods, as such, in gout is irrational. The uric acid produced in health comes exclusively from two sources: the larger moiety, or exogenous uric acid of Chittenden, from the nucleins and purin bases of the food; the smaller, or endogenous, moiety, from the destructive metabolism of the nucleins of the body-tissues. It is the endogenous moiety alone which is increased in gout and lithæmia. Gout and lithæmia are mere symptom names for a miscellaneous group of chronic toxæmic processes of widely varied origin, characterized by the production of uric acid and the urates. By "gouty diathesis" we mean the possession of a sufficient degree of resisting power on the part of the protective cells of the body to oppose the entrance of any poison, whatever its character or source, with consequent destructive metabolism and production of uric acid, but not adequate to neutralize or successfully to prevent its absorption. The uric acid of gout, like the phosphoric acid which invariably accompanies it, is merely a result and measure of the destructive metabolism of the nucleins of the body-cells, chiefly probably of the leucocytes, in response to the invasions of poisons or toxins, either organic or inorganic (lead, phosphorus, alcohol, acetone). Hence the use of lithium or other "solvent" agents is irrational, and any benefits resulting are to be explained on other grounds.

As most of the toxins setting up this destructive metabolism and consequent uric-acid production are of intestinal origin or entry, diet in gout should be regulated solely with regard to the diminution of intestinal fermentation and putrefaction. As animal foods, from their much more appetizing and attractive flavors, are more apt to be

indulged in in excess of the oxidative powers of the body, their limitation may be found to be more necessary than that of vegetable foods, but sugars and starches are also very often at fault. As uric acid and the alloxur group are not toxic, or at best feebly so, and are not the cause of gout, the prohibition of even foods rich in nucleins and purin bases, such as red meats, roe, and sweet-breads, has no rational basis and is clinically of doubtful utility except by diminishing the attractiveness of the dietary. The rôle of the liver in gout is a negative one, being inability to perform its chief normal function as a "poison filter," and to absorb or to transform into harmless excretory substances the excess of toxins brought to it by the portal vein. Woods-Hutchinson (*Lancet*, Jan. 31, 1903).

VACCINATION.

The theory of the immunity conferred by vaccination is founded on incontrovertible scientific evidence; the infectiveness of small-pox has been shown to be uncontrollable by mere sanitary regulations unaided by the vaccination of the community; and vaccination is adequate to protect completely against small-pox after exposure to that disease even up to the fourth day, and would reduce the severity of the disease to such an extent as to avert a fatal issue in almost every case in which vaccination is concurrent with the exposure. The question of the effectiveness of the glycerinated vaccine-lymph was no longer a matter of opinion, for, out of 126 000 vaccinations made with this lymph, 98 were unsuccessful. P. H. Bryce (*Medical Society of State of New York: Boston Medical and Surgical Journal*, Feb. 26, 1903).

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SALINE INFUSION IN THERAPEUTICS.

THE use of saline infusion in therapeutics is growing apace with time, judging from the increasing number of articles upon the subject. The *Journal of the American Medical Association* of March 7th refers to the recently recorded labors of Erklentz¹ in the following words: "Animals treated by infusion after otherwise fatal intoxication survived, and their organs showed little trace of the intoxication to which the control animals all succumbed with severe alterations in their organs. The best results, strange to say, were obtained, not from the true isotonic 9-per-cent. salt solution, but with the 6 per cent. The benefit was most apparent the nearer the infusion approached to being continuous. In some of the tests the poison used entered so rapidly and firmly into combination with the nerve-cells that the infusion was too late to affect it. The diuresis invariably induced did not eliminate any of the poison in these cases. The results of infusion after experimental injec-

¹ Therapie der Gegenwart, January, 1903.

tions of anilines and potassium chlorate harmonize with what is observed in the clinic, especially in respect to severe anaemia, which is now regarded as a toxic affection, in septic affections and in uraemia.

"Septic conditions are benefited to a remarkable extent by infusion. In a case of malignant endocarditis, for example, with extremely painful joint metastases, the swelling and pains in the joints vanished as if by magic after the infusion. A patient with puerperal sepsis was roused from her stupor, and another was undoubtedly saved by the systematic continuous use of infusion. Its efficacy in uraemia is well known. Improvement and sometimes recovery followed the copious diuresis induced, but the specific gravity of the urine frequently remained high, and even rose higher with the increasing amount of urine. The results were always highly satisfactory in severe anaemia. In one case the haemoglobin rose from 20 to 85 per cent. and the reds from 368,000 to 4,800,000. The morphological alterations in the blood retrogressed, and the slight temperature subsided. So long as severe symptoms persist, 1 or 2 liters should be injected subcutaneously once to several times a day. When exceptionally prompt action is desired, the intravenous route may be preferable, preceded, perhaps, by venesection. The writer concludes by advising the use exclusively of the 0.6- or 0.62-per-cent. solution as the only isotonic one."

Maurice Kahn,² after stating that the credit for the first use of salt solution hypodermically for the cure of pneumonia doubtless belongs to Dr. F. C. Henry, of Philadelphia, reports the following case: "I was called to see the patient whose case has supplied the text for this paper the morning of December 25, 1899, and found a woman about 50, well developed and fairly well nourished. Previous history is negative. Present illness began December 24th, with chilly sensations, hot flushes, a feeling of general discomfort, and malaise. The morning of December 25th she had a chill. Temperature at the time of my visit was 102.5° F., pulse 120, with the physical signs of a developing right basal pneumonia. On December 27th she was markedly worse. During the night the embarrassment of the heart and the respiration grew more and more serious, despite the hypodermic use of 0.01 gram ($\frac{3}{20}$ grain) of strychnine, 0.002 gram ($\frac{1}{25}$ grain) of digitalin, 0.001 gram ($\frac{1}{50}$ grain) of atropine, and 2 cubic centimeters (30 minims) of whisky within two hours. By this time the patient had a pulse of 160, temperature of 103.5° F., Cheyne-Stokes respiration, pronounced cyanosis; cold arms, legs, and forehead; and was apparently moribund. Further medication seemed useless. I then tried hypodermoclysis, giving her, in all, four injections within six hours, aggregating about 3 pints. The immediate effect was astonishing. The pulse became slower and of better quality, the temperature dropped, cyanosis disappeared, respiration became regular, consciousness returned, a general mild perspiration superseded the dry skin, and diuresis was marked. I regret now that an examination of the urine was not made. For two days following rectal injections of salt solution were given at intervals. The subsequent history of the case is of great interest. On the ninth day of the disease, as there had been no voice-sounds nor râles for three days, with absolute dullness of the involved area, acupuncture was performed. Result—dry

² American Medicine, February 7, 1903.

tap.' From this time on recovery was slow, but, on the whole, satisfactory. Treatment was symptomatic till February 16th, the day of her discharge."

Finally R. C. Kemp,³ referring to hypodermoclysis, recommends the following technique:—

Precautions.—1. Allow the fluid to flow slowly, so that the tissues may not be overdistended and that absorption may readily occur. 2. To avoid entrance of air into the tissues, the fluid should flow from the needle at the moment of puncture; also the vessel containing the fluid should never be allowed to become completely emptied. 3. Do not inject directly into œdematous tissue; dropsy of the organs or serous cavities is not a contra-indication to hypodermoclysis, which is of value to aid elimination by its diuretic action. 4. Regarding the needle employed, it should be pushed in semi-obliquely and steadily, and not plunged in suddenly. Beware of injuring vessels and nerves. It is not advisable to inject into muscular tissue, as painful lumps, or even abscesses, may result. 5. If the flow from the needle ceases, push it in slightly and then withdraw it a little, or else rotate it. This will generally free it from the obstruction.

Site for the Injection.—Numerous sites have been advocated, such as beneath the breasts, in the chest-wall, abdominal wall, axillary space, and cellular tissue of the neck, back, groin, and thigh. The writer suggests the ilio-lumbar region, the space between the crest of the ilium and the twelfth rib, as most convenient. It is practically the point of least motion in the body, and does not interfere with the dorsal position or cause pain through movements of the limbs or from abdominal or thoracic respiratory movements.

Solution to Employ.—The ideal solution is normal, or, more correctly speaking, decinormal, saline solution, or 0.6 per cent. of salt-water boiled and filtered.

Hayem's artificial serum consists of:—

Sodium chloride	5 grams.
Sodium sulphate	10 grams.
Distilled water	1 liter.

Others add small quantities of carbolic acid to the saline solution. The author employs saline solution alone, as being bland and less irritating to the kidneys.

Quantity of Solution to Employ.—Hildebrand, of San Francisco, states that 1 drachm of normal saline solution in proportion to 1 pound of body-weight, is the maximum quantity that will be taken care of by the kidneys, every fifteen minutes; thus, in a patient weighing 100 pounds, 100 drachms (or 12 ½ ounces) will be taken care of by the kidneys in the time stated. This affords a pretty good guide that we should not inject with greater rapidity than a liter in about forty-five minutes.

Furthermore the degree of tension of the fluid and the rapidity of absorption can be readily noted, and the condition of the circulation modifies the results. In other words,

The rapidity of absorption is modified by existing clinical conditions. Thus, for example, though diuresis commences in from three and one-half to four minutes when normal saline solution is administered by hypodermoclysis under normal conditions, and the method is then second in rapidity to infusion in entering the cir-

³ New York Medical Journal, February 28, 1903.

culation; yet with a rapid and feeble heart, with poor action of the capillaries, it is the slowest method of all, and the fluid may remain *in situ* for a long period of time with apparently little or no absorption. Under this condition, especially, the danger of overdistension of the tissues is manifest. If, however, we combine with the hypodermoclysis, enteroclysis with normal saline solution at 120° F., the heart is immediately started up and absorption occurs more rapidly.

One would never keep up a continuous hypodermoclysis as a clinical measure, deducing such method from the experiments of Hildebrand. His work, however, ably demonstrates to what extent the kidneys can take care of the fluid injected. For practical purposes the fluid would be injected once, twice, thrice, or even possibly four times in the twenty-four hours, the quantity of the injection and the proximity of the injections in point of time to each other depending on the rapidity of absorption and the conditions for which they are indicated.

In some cases, in oliguria or in uræmia, frequently repeated injections of moderate amount seem to promote the excretion of toxins better than the employment of a single large volume of saline solution; also there is less strain on the kidneys. This fact was clearly brought out in the author's experiments, and on page 164 of his manual, "Enteroclysis, Hypodermoclysis, and Infusion," published in November, 1900. Lenhartz⁴ holds similar views.

One may give a single large injection in one loin or half of it in each, and, as stated, several times a day, if indicated.

Thus, in an infant weighing 8 pounds, as for the toxæmia or excessive loss of fluid in cholera infantum the author employs from 1 to 4 ounces of normal saline solution on each occasion, one, two, or even three times in twenty-four hours, depending on the severity of the case. If there is shock or hæmorrhage, we might use from 4 to 12 ounces in divided doses, and in several regions at one sitting.

In an adult, from 6 ounces to a pint is indicated in uræmia and allied conditions; from 1 pint to 1 quart if there is shock or hæmorrhage. Several injections may be required during the twenty-four hours.

In pulmonary hæmorrhage or in hæmorrhage from gastric or intestinal ulcers, as in typhoid fever, hypodermoclysis is an excellent method. An infusion or enteroclysis might stimulate the heart too suddenly and forcibly and cause recurrence of the hæmorrhage. The author has seen this occur, in pulmonary hæmorrhage, from the administration of alcohol, whereas the hypodermoclysis, acting more slowly, being first collected by the lymphatic system, replaces the loss of fluid, while the danger alluded to is eliminated. The saline solution is also believed by some to have a certain styptic effect. On this same principle, salt-water has been administered, by the mouth, by many of the Saranac physicians in cases of pulmonary hæmorrhage.

Method of Injection.—A Davidson syringe, glass irrigating jar, a funnel, or preferably a fountain-syringe can be employed. Dr. Kelly suggests the reversed aspirator. Fowler's apparatus made on the latter principle is a good method.

Height of the Receptacle Containing the Solution.—Two to three feet above the level of the patient, depending on the rapidity of the flow.—The smaller the

⁴ "The Therapeutic Value of Saline Infusion in Acute Diseases."

needle, the higher the receptacle; if a small hypodermic needle is employed, the receptacle should be elevated to a height of five or six feet.

Needle.—An aspirating needle of moderate size is generally employed. A hypodermic needle can be used in an emergency. In the *Medical Record* for April 14, 1900, in an article entitled "Observations and Suggestions Concerning Hypodermoclysis," the writer described a simple attachment for hypodermoclysis, the screw thread of which will fit an average size hypodermic or aspirating needle. It also has an enlargement adapted to fit snugly the rubber tubing of a Davidson or fountain-syringe. In this same article he also referred to the value of repeated small injections of normal saline solution in uræmia.

Some have suggested an attachment with several needles for simultaneous injection. There is no advantage in this, as the method is more painful, the flow too rapid, massage cannot be properly performed during the injection, and the dangers of infection are greater.

Massage.—During injection the single needle can be moved around in the arc of about three-fourths of a circle; gentle peripheral massage should be carried on meanwhile to promote absorption.

Temperature of the Solution.—There is a great loss of heat, 5°, 10°, or 15° F., while the fluid is passing through the tube and needle. The author employs, therefore, a temperature of 110° F. with a needle of moderate size, and a temperature of at least 115° F., or even 120° F., with a small or very fine needle.

Antisepsis.—The instruments, the site of puncture, and the hands of the operator should be sterile. The solution should be boiled and filtered.

Local Anæsthesia.—One can employ ethyl chloride, ether-spray, or ice; or touch the spot to be punctured with a drop of carbolic acid, and then neutralize the latter with alcohol. A strong ichthyol ointment, 50 per cent., has an anæsthetic effect, if applied several hours previously. Dr. Pryor suggested this method as preparatory to an infusion. In a majority of cases, however, local anæsthesia is unnecessary.

Dressing the Puncture.—As the needle is removed, a finger should be slipped over the site of puncture, to prevent the escape of fluid. After drying off the moisture with aseptic gauze a small piece of sterile gauze should be placed over the puncture and flexible collodion painted on. This is preferable to adhesive plaster, which might be a source of infection through irritation of the skin. It is an excellent plan to anoint the entire œdematous area with 10-per-cent. ichthyol ointment. Since following this last procedure, the writer has not met with trouble from infection. Often the single dressing to the puncture will suffice.

Commentary.—We have referred in these columns to the important rôle of alkaline salts in the vital processes of the organism, and to the fact that Metchnikoff, Behring, and Nissen and Paul had found that the bactericidal properties of experimental animals decreased as the alkalinity of their blood became reduced. The first two of the foregoing abstracts contribute further evidence to the importance of the blood's alkalinity, and a few remarks as to the nature of the process

—as we conceive it—through which saline solution produces its main beneficial effects may not be out of order.

When animals are fed on foods deprived of alkaline bases, dyspnoea, as manifested by rapid panting, intense muscular weakness that finally lapses into paralysis, very rapid pulse and coma, appear in turn. If, now, alkalis be administered to these animals, even when death is near, the untoward symptoms are at once arrested and recovery ensues. That this may be repeated clinically is shown by a case reported by Lépine, in which a threatened diabetic coma was arrested by means of intravenous injections of a solution containing 300 grains of sodium bicarbonate. Besides emphasizing the now established value of saline infusions, this instance, as interpreted from our point of view, suggests two features of considerable pathological importance. The first of these is the evident influence of an alkaline solution in suddenly causing the heart to resume its activity under the effect of a sudden increase of the adrenal secretion. "The infusion was conducted a little too rapidly," says Lépine, "and, in consequence, on auscultation of the heart a galloping action of that organ was recognized, but there were no subjective cardiac symptoms, and the galloping ceased in a few minutes as the result of simple suspension of the infusion." Had the sudden onset of salt solution been the only cause of the cardiac phenomena, galloping would not have occurred; both sides of the heart would have suddenly assumed inordinate activity. Galloping being attended with a double beat, the right heart responded first to the effects of the adrenal secretion and the reaction of both sides soon became even.

The second feature refers to the manner in which saline solutions produce their effects. Thus, in Lépine's case the result was most satisfactory: the patient passed nearly 6 quarts of urine in the next twenty-four hours, and the pulse fell to 68. The urine was progressively augmented, but remained acid, although its acidity was somewhat diminished. Can we, under these circumstances, ascribe the result witnessed to the neutralizing influence of the alkaline salt upon the physiological acids generated? Evidently not, since the first effect of the infusion was a great elimination of beta-oxybutyric acid. Hence, the alkaline salt did not *neutralize* the beta-oxybutyric acid, but *facilitated its elimination*. We have here, therefore, not a chemical reaction bearing directly upon a toxic agency, but the liberation of toxics *pent up*, as it were, *in the organism*. Indeed, it is now generally recognized that a quantity of urine much greater than the saline solution injected will be voided as a result of its immediate effects. So evident is this fact that it has led Lenhartz, for example, to advocate frequently repeated injections subcutaneously. He found that from 2 to 6 ounces every three to four hours have a better diuretic effect and cause less strain on the kidneys than a pint given several times daily.

The fact that the solution, so to say, unlocks all cellular functions may also

be illustrated by the following case reported by G. A. Himmelsbach,⁵ in which physical examination of the heart showed both mitral and aortic disease with dilatation. It was not thought to be hypertrophy, the apical impulse being very feeble. The urine passed in twenty-four hours was 450 cubic centimeters; its color, dark amber; its odor, normal; its density, 1.031; and the total solids, 32.50 grams. The indican was increased; urea, 14.85 grams; uric acid present; *chlorides normal*, a feature which seems to suggest the utter valuelessness of this test. It contained hyaline, granular, and epithelial casts. The lungs were water-logged, and his face, arms, and body were swollen beyond recognition. Notwithstanding the use of remedies, the case grew worse. He had sinking spells, requiring prompt hypodermic treatment. On the morning of June 26th the face and hands were cyanotic, the arms and legs were cold, the respiration labored, and the pulse could not be felt. The use of normal saline solution was resorted to, the fluid being introduced in the left thorax. Himmelsbach refers to the result as follows: "The *séance* requiring about 15 minutes, peripheral massage was applied continuously. The exact measurement of the urinary secretion for the 24 hours preceding this test was only 210 cubic centimeters, or $\frac{2}{5}$ pint. At 6.35 P.M., or 20 minutes later, the patient voided 30 cubic centimeters, or 1 ounce, of neutral urine with a specific gravity of 1.024. Beginning now, the experience for the next few days was the most phenomenal I have ever witnessed. At 8 o'clock that evening, or in 1 hour and 25 minutes, he voided 450 cubic centimeters of neutral urine, with a density of 1.006—a drop of 18. At 8.30, or 30 minutes later, another 450 cubic centimeters; at 9.30, 470 cubic centimeters; at 10, 490 cubic centimeters; at 10.40, 540 cubic centimeters; 11.20, 570 cubic centimeters; 11.45, 420 cubic centimeters; 11.55, 150 cubic centimeters; a total in exactly 6 hours of 3540 cubic centimeters, or 7 pints. This unusual output did not terminate here, but continued with unceasing flow through the several days following."

We have emphasized the fact that in the light of our views there exists a close relationship between a deficiency of alkaline salts in the blood and death. Evidence that inhibition of the protective functions is the predominant factor of the lethal tendency is afforded by the fact that saline solutions cause the manifestations of protective activity induced by the *restored adrenal system* to recur. In such a case as that of Lépine's there is no fever; indeed, this distinguished clinician specifies this fact: *i.e.*, "the depth and frequency of his respirations (32 a minute) were striking; the pulse was 108, but there was no fever." As interpreted from our standpoint, adrenal insufficiency had already supervened, the rapid breathing and pulse testifying to this. He was on the verge of collapse: the condition recog-

⁵ Buffalo Medical Journal, November, 1901.

nized by Lépine and which led him to use the 2 quarts of sterilized water containing 300 grams of sodium bicarbonate. We have seen the result.

In cases of uræmia treated by Bosc⁶ the fact that the temperature rose (proof of recurrence of adrenal activity, in our opinion) after the injections is emphasized. In one of his cases it rose 1° C. (1.8° F.) in an hour after the injection. In another the rise was still more marked. In a third, the gradual restoration of the adrenal system to its normal state is suggested, as shown by the fact that, while the temperature rose only 1 degree during the day after the first injection, after the second injection it rose above 2 degrees. The pulse, which had been *very rapid*, became slower; the respiration, which had been *irregular* of the Cheyne-Stokes type, became regular. The quantity of urine passed during twenty-four hours increased notably. The influence of the revived anterior pituitary body and its executive organs, the adrenals, seems to us clearly depicted. Indeed, it is strikingly shown in the following editorial reference to the investigations of Claisse and Bosc⁷: "Take a patient suffering from severe infection—puerperal, for instance; all organs are affected and are working badly, the temperature is about 104° F.; in ten minutes 1300 to 1400 grams of saline solution are injected subcutaneously. Before half that amount has been reached the improvement is manifest. The pulse becomes more regular, fuller, and stronger; respiration is deeper and less hurried, and possibly the temperature falls a degree at the end of the injection." Again: "The patient feels better, is brighter, and possibly desires to urinate, but not any great amount. Usually the patient now enters what is known as the critical stage, which comes on generally in four or five minutes, though it may be delayed to half an hour. There is a violent chill, with sensations of extreme cold; strong, rapid, pulse; and a rapidly rising temperature. Following this the patient goes through a fevered stage, from which she emerges; the temperature falls, and she may have no further trouble."

A large number of instances could be adduced in which similar manifestations following the use of saline solutions, whether introduced subcutaneously, intravenously, or by the rectum, gave rise to similar phenomena of adrenal functions. It is evident, therefore, that, *through its direct action upon the body-fluids, the saline solution liberates the protective functions of the organism and primarily those of the adrenal system.*

Adrenal insufficiency must, indeed, have attained a depth approximating arrest of function when the adrenal system fails to respond to the introduction of saline solution in the circulation. Moribund cases are often practically resuscitated, and

⁶ La Presse Médicale, vol. 1895.

⁷ Medical News; from Revue de Chirurgie, vol. 1895.

in some instances with remarkable rapidity. Thus, W. Thelwall Thomas⁸ refers to a case of cut-throat in which the external and internal jugular veins were entirely divided and the common carotid artery wounded. The patient, when first seen, was *in extremis*, but reaction set in almost immediately upon the injection of 20 fluidounces of saline solution. Ramsay⁹ relates the following case: "A man, aged 46 years, had severe typhoid fever; the temperature was 104.2° F., and the pulse was 100. He passed 8 ounces of blood, and on the following day 10 ounces, and a few more ounces with the stool. The temperature fell to 97.6° F., the pulse was from 70 to 80, the respiration was sighing, and the skin was clammy. Brandy, strychnine, and digitalis were given without effect. The pulse became weaker, and unconsciousness and lividity of the hands and ears supervened. He was practically moribund. Two pints of normal saline solution at 100° F. were injected into the median cephalic vein. Toward the end of the injections the pulse improved in volume and the general appearance became better. But the effect was only temporary. The patient was livid and lay with half-closed eyes, hiccupping, vomiting, and passing urine involuntarily. Four hours after the first injection 1 1/2 pints of the solution were injected. Improvement again followed, which was more lasting. After this the fever ran the ordinary course, a relapse of ten days' duration occurred, and he slowly convalesced."

C. E. DE M. S.

ALCOHOL: IS IT A FOOD OR A POISON?

IN an editorial the *British Medical Journal* of March 14, 1903, refers to a somewhat heated controversy which is now being waged among scientific men in France on the alimentary value of alcohol. "In *La Revue* of February 15th," says the editorial writer, "the question is debated by a number of the leading representatives of medicine and chemistry. M. Duclaux, Director of the Pasteur Institute, opened the discussion. On the strength of a number of experiments made on themselves by two American investigators (Messrs. Atwater and Benedict), he declared two or three months ago that alcohol, so far from being a poison, has in moderate doses a distinct dietetic value. This profession of faith, made as it was just at the time when the Académie de Médecine was, at the request of the Minister of the Interior, drawing up a list of toxic essences employed in the manufacture of liqueurs, and when the Prefect of the Seine had placarded the walls of Paris with warnings as to the deadliness of alcohol, caused no little scandal among the anti-alcohol party, who, with the charity characteristic of 'anti's' of every hue, even hinted that the opinion of the distinguished successor of Pasteur was not altogether disinterested. This ignoble imputation is mentioned only to show the degree of malevolence and mendacity to which the minds of well-meaning persons can be

⁸ Lancet, November 26, 1898.

⁹ Intercolonial Medical Journal of Australasia, December, 1898.

inflamed by prejudice. In *La Revue* M. Duclaux states that no definite practical consequences can yet be drawn from the experiments of Atwater and Benedict. He is anxious that the question should be fully discussed, but he awaits the coming of adversaries who will consent to read and reflect before rushing into print. In the meantime he will agree to a truce, accepting as an average one liter of wine a day, an amount which has been shown by the American investigators to be harmless and even useful. The wine must be well diluted with water, and its consumption spread over a day.

"Dr. Roux, also of the Pasteur Institute, holds that, even if Atwater and Benedict's experiments be accepted, the fight against alcohol must still be continued. He thinks that habitual drinkers will never submit to the restricted allowance which Messrs. Atwater and Benedict imposed on themselves. In regard to wine Dr. Roux admits that the experience of centuries as seen in whole nations shows that moderate drinking does no harm. Metchnikoff holds that alcohol in any form is a poison. He confesses, however, that he has not made a special study of the question, and his conclusion is based on his personal experience. He never drinks alcohol himself, as he has found that even a small quantity makes him giddy. M. Berthelot is clear that alcohol is not a food. In very small doses it may be useful as a medicine. He thinks alcoholism is a factor in the present decadence of most European nations, and that their only hope of salvation lies in vigorous legislation against the evil. Professor Brouardel gives the guarded reply that from the chemical constitution of a body no conclusion can be drawn as to its alimentary value; experience alone can decide the question. Prof. Charles Richet says there is no doubt that alcohol is a food, and that in very small doses, when pure, it is almost harmless. This fact, however, does not warrant the inference that it is a good food. He thinks that men must be angels before alcohol ceases to be a great danger. It is a mischievous delusion to think that alcohol is consumed as a food; it is rather its poisonous effects that are sought by unfortunates anxious to forget their misery. Professor Bernheim, of Nancy, does not think that the use of alcohol should be proscribed. He even holds that many abstainers from 'the generous wine of France' are actuated by *snobisme*. Wine, he says, is, like other medicines, poisonous only in large doses. It would be as reasonable to forbid its use on that account as to condemn the eating of meat because it contains ptomaines, or eggs because phosphorus enters into their composition. Like everything that we take, wine suits some and not others.

"Dr. Lancereaux also holds that wine is dangerous only if taken in too great quantity: for instance, in a daily dose of three liters. Alcohol in every form, however, if taken to excess brings on premature senility and tends directly to tuberculosis and death. Dr. Héricourt holds that to the question: Is alcohol a food? no absolute answer can be given. Every food is toxic in certain amounts, and although the consumption of a liter of wine a day may never have been a direct cause of the death of anyone, it may be so indirectly, as by diminishing the power of resistance to disease. Dr. Landouzy is of the opinion that natural wine, taken in doses suitable to age, constitution, and mode of life, does not deserve the uncompromising condemnation of intemperate advocates of temperance; he looks upon spirits and liqueurs, however, as, generally speaking, pernicious. Dr. Magnan

thinks that, whatever chemistry or experimental physiology may appear to show, alcohol can never be recommended as a food. Dr. Garnier, speaking from a large prison experience, says that alcohol is responsible for 70 per cent. of all the crimes committed in France. Dr. Bourneville is not hostile to wine; he holds with M. Duclaux that from the hygienic point of view it is distinctly useful in moderate doses.

"On the whole, then, the weight of opinion among leading scientific men in France is in favor of the dietetic value of wine. But the wine must be pure and it must be taken in moderate doses. Those who, like Cassio and Dr. Metchnikoff, have very poor and unhappy brains for drinking ought by all means to avoid looking upon the wine when it is red. They have no right, however, to make this personal idiosyncrasy the measure of other people's tolerance, still less to found upon it a universal law for the governance of mankind.

"As to the deadly effects of the abuse of alcohol, we are agreed, and probably all will also agree that its use should be carefully regulated in accordance with individual constitution. The experience of men differs. Mr. Gladstone, who had an 'open mind' in most directions, tested the matter for himself. He found that wine helped him when he had to make an extraordinary oratorical effort, and the want of it made the effort more laborious and less successful. On the other hand, some find that wine paralyzes their faculties. In regard to alcohol, it may be said, with truth, that what is one man's meat is another man's poison, and that homely proverb seems to us to sum up the teachings of science and philosophy on the question."

Commentary.—It seems to us that it would be difficult to find greater proof of the confusion which exists among scientists as regards the physiological effects of alcohol. Indeed, even a cursory perusal of the literature of the last half-century would bring to light another significant feature: *i.e.*, the fact that the arguments *pro* and *con* the alimentary value of this agent have not varied to any material extent notwithstanding the great amount of experimental evidence recorded.

In the light of our views (see the March issue of this journal) this is readily accounted for by the fact that the adrenal system bears the brunt of the influence exerted by alcohol upon the organism. In our work on the "Internal Secretions and the Principles of Medicine" (page 56) we refer to the various manifestations of alcoholism in the following words: "Acute alcoholism probably typifies better than any condition brought on by poisons the fall from a primary intense erethism of the cerebral circulation to the opposite state through suprarenal insufficiency. The cheerfulness and the gestures of the inebriate often reach a stage of inordinate excitement, mental and physical. If deterioration of the cerebral cellular elements have occurred through previous excesses and delirium tremens appear, the delirium is attended with terrors and frightful vision; if *mania a potu* prevail, the patient—perhaps gentle and kindly disposed normally—becomes furious, wild,

shouts and strikes, often with homicidal intent, him or her whom he probably most cherishes.

"Here, again, the suprarenal glands are shown to be primary factors of the process by the excessive muscular activity. But is the action of the secretion exerted directly upon the muscular tissues or upon the nervous structures themselves, including the centers? The action of alcohol 'would seem to be due,' according to Wood, 'to a direct action upon the heart itself or upon the walls of the arterioles.' By inserting 'suprarenal secretion' instead of the word 'alcohol' the process becomes clear, since it is the former which would cause contraction of the walls of all muscular vessels and of the heart-muscle, followed by centrifugal pressure in the cerebral capillaries almost to bursting-point: the source of the intense hyperæmia found post-mortem.

"In *mania a potu*, in which the most violent mania prevails, the pulse is strong, bounding, and tumultuous: an indication of correspondingly excessive suprarenal activity. When the critical stage is reached,—the first sign that the organism's protective organs, the adrenals, are losing their hold,—reason, will, and consciousness fail, and insensibility soon follows. That these organs are concerned in the production of these effects is demonstrated by the marked fall of the blood-pressure, and the rapid, thin, and compressible pulse. The lower limbs, early in this stage, have first shown their inability to support the body. 'In the majority of carefully examined cases the lower limbs are affected before the upper,' wrote Norman Kerr several years ago, though not aware that in this statement he pointed to a primary sign of suprarenal insufficiency."

Briefly, we have in the phenomena of alcoholism manifestations similar to those produced by any toxic, the earlier exaltation of the mental faculties, the sensation of well-being, etc., being but prototypes of like effects by several drugs that stimulate the adrenal system to a corresponding degree. Accompanying this earlier stage are the slow and strong pulse, the increased vascular pressure, the flushed face, the slowed and deepened respiration, etc., which so clearly depict the effects of overproduction of adrenal secretion, and which last until the adrenal center, overpowered by the alcohol, gradually yields. The "dead-drunk" is naught else than a man whose adrenal system has lapsed into advanced adrenal insufficiency.

Can alcohol under these circumstances be considered as a food? All we can say is that in the light of our views it is only entitled to the position of a drug which, like all other drugs, becomes a toxic when ingested in sufficient quantities.

C. E. DE M. S.

Cyclopædia of Current Literature.

ABDOMINAL INCISION, METHODS OF CLOSING THE.

The most reliable statistics prior to 1894 show that hernia occurs in from 6 to 29 per cent. of abdominal sections. Suppurating abdominal wounds result in from 31 to 68 per cent. of hernia (according to the method of suturing). The frequency of hernia is increased with the thickness of the parietal wall. The longer the incision, the greater is the likelihood of hernia. Drainage openings predispose to its production. The site of the incision does not materially add to the occurrence, if suturing is uniform. Abdominal supporters have absolutely nothing to do with the prophylaxis of this condition. Subsequent pregnancy does not influence its occurrence.

The best preventive of post-operative hernia is the aseptic healing of the wound. Through-and-through suture is satisfactory in thin subjects with short incisions, and is recommended when rapid closure is imperative. The best method of suture is one which insures accurate coaptation of the fascia. The method of closure in three layers by continuous silk-worm gut in peritoneum, fascia, and subcutaneously seems to be freer from objections than any other. Its extended trial is desirable. The patient should be confined to bed from two and one-half to three weeks to insure thorough organization and consolidation. After a wound is completely healed no other influence acts deleteriously upon the permanence and resistance of the cicatrix. It is believed that less than 2 per cent. of abdominal incisions should become infected, and

not over 3 per cent. of hernias should result. W. D. Haggard (*American Medicine*, Feb. 7, 1903).

ANEURISM, OPERATION FOR THE RADICAL CURE OF, BASED UPON ARTERIOGRAPHY.

The recognized advantages of the radical operation for the cure of aneurisms of the peripheral arteries, as demonstrated by the statistics of the last decade, can be greatly increased, and the sphere of application of this operation can be broadened by the adoption of the method of suture and obliteration of the sac instead of the classical ligation of the arteries, with or without extirpation, as hitherto practiced. The closure of the arterial orifices which supply the aneurismal sac, whether these be single or multiple, by means of suture, and within the aneurismal sac itself, greatly simplifies the technique of the radical operation, and is a reliable means of securing hæmostasis. In favorable cases—and the sacular aneurisms with a single orifice communicating with the lumen of the larger arterial trunks are the most favorable—it is possible, by careful suture, to obliterate the aneurismal opening without obstructing the lumen of the parent-artery, thus protecting the limb from the risk of gangrene. It is also possible in favorable cases of fusiform aneurisms of traumatic origin, and in all those in which the sac material is healthy and pliable, to restore the lost continuity of the artery by building a new channel which will connect the two main orifices of communication and restore the interrupted

circulation in the parent-vessel. This result can be obtained by utilizing the sac in the manner previously described by the author.

That the fear that atheroma and other degenerative changes will interfere with the healing and repair of the arterial tunics has been greatly exaggerated, is shown by the abundant experience of the aseptic period in the ligation of sclerotic arteries in continuity, in the absence of the secondary hæmorrhage in the amputated stumps of the aged diabetic and other arterially diseased subjects, and is still demonstrated more fully by the observations and statistics of the partisans of the radical operation by extirpation who have reported numerous successful results in spontaneous as well as in traumatic aneurisms.

The fallacy and dangers of the old operation of Antyllus lie in the fact that the preliminary ligation of the main artery above and below the sac will not always control the bleeding from the collaterals which often open into the aneurism or into the main trunks between the orifices in the sac and at the seat of a ligature. This compels a more or less extensive dissection of the sac out of its bed as one of the necessary features of the procedure, in order to secure all the collateral vessels that empty into the sac, unless the uncertain process of plugging the openings and packing the sac itself is resorted to. If the sac is dissected, as is usually done to secure the collaterals, the difficulties of the operation are increased, and the vitality of the limb is endangered by interfering with the collateral circulation, which, in many types of aneurism, is most freely developed in the neighborhood of the sac. Another serious objection to the old Antyllus

operation is that the sac remains an open cavity in the bottom, being packed or drained and allowed to heal by granulation, with the danger of infection, suppuration, and secondary hæmorrhage.

The uncertainties and dangers of sac extirpation are even more apparent on account of the greater risk of injury to the accompanying satellite veins and nerves, which blend with the sac; so that only a partial extirpation is at times possible. Moreover, there is the danger, of interference with the collateral circulation, with the risk of mortification in the distal parts. R. Matas (*Annals of Surgery*, Feb., 1903).

ANTISEPTICS IN HAND-DISINFECTION.

Absolute sterility of the hands is impossible by any method. There is no royal road to sterilizing the skin, nothing takes the place of long and vigorous mechanical scrubbing. The longer the hands are scrubbed under aseptic precautions, the nearer the approach to sterility. The use of antiseptics on the skin is, at least, questionable; under the usual conditions, it is distinctly harmful. When the true value of antiseptics is understood, we will have cleaner hands, due to more conscientious scrubbing. The use of rubber gloves, while not ideal, is the nearest approach to it. The operator whose hands perspire freely ought to wear gloves in every case, regardless of all objections to them. E. R. McGuire (*American Medicine*, Feb. 28, 1903).

ANTITOXIN, THE VALUE OF.

The value of antitoxin treatment in diphtheria is clearly demonstrated in the returns of the Metropolitan Asylums Board of London. In 1894, 3042 patients of all ages were treated in the

Board's hospitals without antitoxin; 902 died, yielding a mortality of 29.6 per cent. In 1895 the antitoxic serum treatment was inaugurated; 3529 cases of diphtheria were treated, and 729 died, yielding a mortality of 22.5 per cent. Hence in the first year there was a fall in mortality of 7.1 per cent. From the Annual Report of the Metropolitan Asylums Board for 1901, recently issued, it appears that in 1901, 6499 patients suffering from diphtheria were treated with antitoxin in the Board's hospitals; 817 died, yielding a mortality of 12.5 per cent. There has, therefore, been a fall in mortality percentage from 29.6 in 1894, without antitoxin, to 12.5 in 1901, with antitoxin. In other respects the treatment has been substantially the same. The laryngeal cases treated in 1901 with antitoxin numbered 753, and there were 159 deaths, which gives a mortality percentage of 21.1.

It has long been known that early administration of antitoxin is important if its real advantages are to be gained. But it would be difficult to furnish more concise or convincing evidence of this well-known fact than the tables printed in the Asylums Board Report from Dr. MacCombie's results at the Brook Hospital. During the year 723 cases of diphtheria were treated with antitoxin, and 78 died, yielding a mortality percentage of 10.79. The antitoxin treatment was applied in each of these cases, but in some it was possible to begin on the first day of the disease, in others on the second, and so on. The paramount importance of administration at the earliest possible moment is seen in the result. The mortality percentage of the first day cases (38) was 0; of the second day (170 cases), 4.1; of the third day (192 cases), 11.9; of the fourth day

(137 cases), 12.4; and of the fifth and subsequent days (186 cases), 16.6. For five consecutive years there has not been a death at this hospital among the cases that came under treatment on the first day of the disease, and of those coming under treatment on the second day of the disease the mortality has not exceeded 5.4 per cent. These figures afford striking evidence of the value of antitoxin, and particularly of its early administration. Editorial (*British Medical Journal*, March 14, 1903).

ARSENIC, A NORMAL ELEMENT OF THE LIVING CELL.

Armand Gautier found that small quantities of arsenic were present in the thyroid gland and other cellular elements. The writer, in a series of experiments on animals, confirmed this fact and concludes that arsenic is a normal element of the living cell, and is to be found in all animals and in all organs. Gabriel Bertrand (*Le Bulletin Médical*, Feb. 4, 1903).

ARTERIOSCLEROSIS AND MENTAL DISEASE.

The important part played by arterial degeneration in determining cerebral disorders in later life has led Dr. Adolf Meyer, of New York, Director of the State Pathological Institute, to inquire into the connection, if any, between the arteriosclerosis and mental disease, and an account of his studies is published in the *New York Medical Record* of January 31st. He concludes that mental disease is not so frequently due to arteriosclerosis as is commonly believed. Observations on the heart and aorta of the insane showed that arteriosclerosis was exceedingly frequent, but mental disorder could be ascribed to such a morbid process only when

it affected the blood-vessels of the brain. In many cases of advanced chronic insanity or dementia such a condition undoubtedly existed. The progress of arteriosclerosis in the brain was associated with loss of memory of the immediate past and attacks of mental confusion and transitory delirium. Such demented were found to be liable to indulge in petty larceny and sexual misconduct, and they were frequently guilty of attempts to set houses afire. Mental disease occurring in that period of life when arteriosclerosis was most common showed, adds Dr. Meyer, no peculiarity in its nature and course that could not be fairly accounted for by the commencing cerebral decadence of later life, which was a prominent feature, especially in neurotic subjects. Both senile and presenile decay of brain-power was associated with arteriosclerosis, but no special arteriosclerotic insanity could be said to exist. When arteriosclerosis was associated with insanity, the prognosis was naturally more serious, as there was no special treatment for such a diseased condition of the arteries of the brain. Editorial (Lancet, Feb. 28, 1903).

BLOOD-PRESSURE, MEANS OF CONTROLLING.

In many instances the control of the blood-pressure is synonymous with the control of life itself. Surgical shock is an exhaustion of the vasomotor center. Neither the heart-muscle, nor the cardio-inhibitory center, nor the cardio-accelerator center, nor the respiratory center, are other than secondarily involved. Collapse is due to a suspension of the function of the cardiac or of the vasomotor mechanism. In *shock* therapeutic doses of strychnine are inert; physiological doses are dangerous or fa-

tal. If not fatal, increased exhaustion follows. There is no practical distinction to be made between external stimulation of this center, as in injuries and operation, and internal stimulation by vasomotor stimulants, as by strychnine. Each in sufficient amount produces shock, and each, with equal logic, might be used to treat the shock produced by the other. Stimulants of the vasomotor center are contra-indicated. In *shock* cardiac stimulants have but a limited range of possible usefulness, and may be injurious. In *collapse* stimulants may be useful because the centers are not exhausted.

Saline infusion in *shock* has a limited range of usefulness. In *collapse* it may be effective. The blood tolerates but a limited dilution with saline solution. Elimination takes place through the channels of absorption. Its accumulation in the splanchnic area may be sufficient to fix the diaphragm and the movable ribs, causing death by respiratory failure. Saline infusion in shock raises, but cannot sustain, the blood-pressure.

Adrenalin acts upon the heart and blood-vessels. It raises the blood-pressure in the normal animal, in every degree of shock, when the medulla is cocaineized, and in the decapitated animal. It is rapidly oxidized by the solid tissue and by the blood. Its effects are fleeting; it should be given continuously. By this means the circulation of the decapitated dog was maintained ten and one-half hours. In excessive dosage there is a marked stimulation of the vagal mechanism. Due caution must be exercised.

The pneumatic rubber suit provides an artificial peripheral-resistance without injurious side-effects, and gives a control over the blood-pressure within

a range of from 25 to 60 millimeters mercury. By the combined use of artificial respiration, rhythmical pressure upon the thorax, and adrenalin injected into the jugular vein, animals which were apparently dead as long as fifteen minutes were resuscitated. George Crile (Boston Medical and Surgical Journal, March 5, 1903).

BLOOD-PRESSURE, RISE OF, IN LATER LIFE.

Arteriosclerosis is classified by the writer as follows: The *involuntary*, common in old people, often hereditary, not necessarily or usually associated with rise of arterial pressure; the nature of which, intrinsic or extrinsic, is unknown, but does not lie in high living. This kind may be vaguely referred to the "faltering rheums of age." The *mechanical*, the result of long-persisting high blood-pressure of whatsoever origin. The *toxic*, resulting from such causes as lead, alcohol, or syphilis; usually met with in younger persons, in some of whom the pressure rises, in others not. The author states that often in his experience he has witnessed cases in which the first deviation from health is not arterial disease, but rise of blood-pressure, the arterial disease being secondary and due to strain; and, furthermore, although this malady has, in common with Bright's disease, the feature of a rise of blood-pressure and consequent cardio-arterial strain, it is essentially distinct from the latter and has no tendency to drift into it. This arterial plethora is remediable even on its second or third appearance. In a somewhat advanced stage, the tendency may not be eradicated; however, it may be held in check under due regulation of life and medicine. One of the main causes of high arterial pressure in mid-

dle life is excessive feeding, and alcohol, apart from excessive feeding, will not produce the condition, while, on the other hand, alcohol is a potent ally. T. C. Allbutt (Lancet, March 7, 1903).

BRIGHT'S DISEASE, CHRONIC, RENAL DECAPSULATION IN.

By persevering effort the author has been enabled to see or get word from all the patients operated on by him, so that he could present the *status* up to date. The first renal decapsulation ever performed for the relief of chronic Bright's disease was done by him on June 10, 1892, and the patient was permanently cured. This case, together with reports of the five preliminary operations which led up to this procedure, was published in the Medical News of April 2, 1898. Subsequent papers giving reports of other cases of his own and the *résumé* of the work of other surgeons in this field were published in the Medical Record of May 4 and December 21, 1901, and of April 26, 1902. From 1892 to 1901, inclusive, the writer personally operated on 19 cases, and during the year 1902 on 32 cases. Of this total of 51 cases, 29 were in males and 22 in females, and the average age was 34 years. In 32 cases the Bright's disease was far advanced. In 41 of the cases the period which had elapsed between the first recognition of the disease and the operation varied from 1 month to 19 years. The general average of this period was 3 years and 4 months, and in 32 cases it was fully 4 years. Nearly all the cases were attended by cardiac or other complications. Of the 51 cases, 29 were of chronic interstitial nephritis, and in all but 9 only one kidney was operated on; 14 were of diffuse nephritis; and 8 of parenchymatous nephritis. If only one kidney was affected

by Bright's disease, he said, the patient suffered very little, and the condition might be discovered only accidentally.

The chances of success for the operation are enhanced by the patient remaining in bed for a week previous to it. This gives the heart a rest, if cardiac complications are present, and affords the best facilities for any preliminary treatment that may be required, as well as for systematic investigation of the quantity and condition of the urine. There are three conditions the presence or absence of which affect the facility with which the operation may be performed: 1. Great length and obliquity of the twelfth rib. This difficulty must be overcome by posture and a modification of the incision. 2. Mobility or firm appearance of the kidney. When there is firm fixation it is generally necessary to incise the capsule at any point that can be reached. For separating the capsule the rubber-covered index finger is the best instrument. 3. The firm or more or less weak attachment of the capsule. Great caution and gentleness should characterize all attempts at decapsulation. In this operation there is often considerable danger of destroying some of the already diminished working tissue of the kidney, and it should never be performed except by surgeons who are already more or less familiar with renal surgery in general. The danger is greater from the condition present than from the operation itself. The procedure, however, should not be too prolonged; so that one hour should be the limit for the decapsulation of two kidneys. The writer has often found half an hour sufficient for operating on both organs. A "team operation" has been proposed, with two surgeons each working on a kidney, but this would hardly

be feasible, as two operators, each with his necessary assistants, would inevitably interfere with the prompt accomplishment of each other's work. Another expedient suggested is that only one kidney should be decapsulated at a time; but this, too, is to be deprecated, as the time that the patient would be under an anæsthetic for two separate operations would necessarily be longer than for operating upon both kidneys during one period of anæsthesia. George M. Edebohls (*Medical News*, March 7, 1903).

BRUSH-DISCHARGE, THERAPEUTIC USES OF THE.

The brush-discharge is especially adapted to the treatment of skin diseases. Lupus, eczema, herpes, acne, scabies, and allied conditions are wonderfully relieved and cured by its action. Many cases of psoriasis have been greatly benefited by its use. The high-frequency discharges have accomplished such remarkable results in the treatment of ulcer of the rectum, fissure of the anus, hæmorrhoids, tonsillitis, and catarrhal conditions as to assure the modality wide recognition when it becomes better known. The application of the brush-discharge within the cavities by means of special electrodes assures it new fields for its use. In this manner it has already been employed in the treatment of otitis media.

The application of the brush-discharge to the early stage of acute inflammatory conditions, rheumatism, sprains, and abscesses, as well as the swelling associated with fractured bones, meets with surprising results, and has not the unfavorable effect of throwing the muscles into painful contraction. If the method of employing these modalities is once understood, as

well as the indications, they will be universally adopted. W. B. Snow (*Journal of Advanced Therapeutics*, March, 1903).

CANCER OF THE RECTUM, SIGMOIDOPROCTECTOMY FOR.

The accepted methods of operating for cancer of the rectum correspond in lack of thoroughness to the old-fashioned amputation of the breast, supplemented by removal of a few enlarged lymph-nodes from the axillary space. This operation has been supplanted by the superior technique of Halsted, and a more radical method of dealing with cancer of the rectum, which includes removal of the sacral lymphatics, is indicated with equal clearness. In a very few cases of rectal cancer indeed it is impossible to remove completely even the primary growth from below, for it appears that many inches above the ending of the macroscopical growth cancerous tissue is still found in the mucous membrane. The author cannot conceive of the complete removal of the infected glands from the sacral hollow by any of the vaginal, perineal, or sacral operations. While no one should underestimate the misfortune of an artificial anus, it should be remembered that sphincteric control is frequently lost after severe rectal operations, even though the anus is preserved, that in this case the opening is very disadvantageously located for mechanical control, and that an artificial anus constructed as above described is practically perfect. In the vast majority of rectal cancers the above—or some equally radical—procedure should be executed if the patient is to receive the benefit of modern, instead of obsolete, surgical principles. This procedure presupposes a perfect surgical technique

and rapid, but painstaking, work, and especially would he emphasize the great importance of completing the abdominal work before attacking the perineal portion of the operation. G. W. Roberts (*Medical Record*, March 21, 1903).

CHLOROFORM DEATHS, FRIGHT AND.

The letters which are constantly appearing in current medical journals indicate very plainly the views which are held in Great Britain on the vexed subject of chloroform *versus* ether as an anæsthetic, but less is generally known of the opinions of the profession in America on this matter. It might perhaps be hastily assumed that in the United States, the home of anæsthesia by ether, no other drug, and least of all chloroform, would be habitually used. To those who are of this opinion the statements made by Dr. J. A. Bodine, Adjunct Professor of Surgery at the New York Polyclinic, will come as a surprise. In a recent lecture he admits freely that chloroform possesses many advantages over ether, but points out that the administration of the former has been followed by a considerably larger proportion of deaths from the anæsthetic than when the latter was employed. He thinks, however, that this unfortunate fatality might be offset to some extent by the deaths which take place some time afterward, from kidney irritation and lung involvement after ether.

He contends that most chloroform deaths are due to vasomotor paralysis, and that deaths from fright occur just in the same way. Two instructive and suggestive cases are cited. In the first, the patient, a very nervous individual, became so frightened before the operation that the rhythm of his breathing

was seriously disturbed; the anæsthetist, in consequence of this, gave him some preliminary training in deep breathing before the administration of the chloroform; the cone was placed over his face, and he was told to breathe deeply; after a few gasps he ceased to breathe and could not be resuscitated. Not a single drop of chloroform had been administered. In the second case, the patient, who was also a very nervous man and very fearful of the result of the operation (for hæmorrhoids), was given an enema before any anæsthetic was administered; he thought this was the first step of the operation, ceased breathing, and died. In both these cases the necropsy revealed no morbid state except the tense abdominal veins, in which nearly all the blood of the body had collected as a result of the vasomotor paralysis consequent upon the fright. Dr. Bodine, therefore, concludes that fright may be an element in the production of death in cases in which chloroform is used. He states that seven out of every ten deaths reported from chloroform anæsthesia occur during the preliminary stage, when only a few drops up to a drachm have been given. There is negative evidence, also, in the fact that in obstetrical practice chloroform is the anæsthetic of choice; this is due to almost complete absence of a chloroform mortality during labor. As an explanation of this freedom from danger we have circumstances that women are not fearful about the anæsthetic in their confinements, but ask freely for it. Children, also, are not frightened as adults are, and consequently suffer little from chloroform as an anæsthetic. Dr. Bodine refers, in addition, to the interesting fact that the negro of the Southern States stands chloroform very

well; he has a child-like faith in his physician, and does not fear any of the measures that he may adopt. Yet the negro may die from fright, as a graphic story of a student trick told by the writer proves. The conclusion is therefore reached that we must, for the safe administration of chloroform, eliminate fright. Dr. Bodine tells his patient to put his hands tightly together, the fingers interlacing, and to grip them firmly; he asks him to fix his mind upon that action, to listen to the voice of the anæsthetist and to do what he tells him, and to breathe deeply and quietly, and not to mind the sensations which come over him. General conversation in the neighborhood of the patient should not be allowed. The writer, in conclusion, thinks that, if deaths from fright could be eliminated, chloroform would be a much safer anæsthetic than ether, and says: "If I had to choose an anæsthetic for myself to-morrow, I should take chloroform, but I should want it administered by a careful, expert anæsthetist." Editorial (British Medical Journal, Feb. 21, 1903).

CUTANEOUS THERAPEUTICS, MASSAGE IN.

Massage frees the skin of epithelial *débris*, facilitates absorption, frees the excretory ducts; it increases the circulation of the blood and lymph of the skin, facilitating the nutritive changes and phagocytosis; it raises the local temperature; it facilitates the absorption of extravasated fluids; it increases the formation of cellular elements, and plays an important rôle in the reparative process of the epidermis; it produces anæsthesia of the sensory filaments, stimulating the motor, vasomotor, and trophic fibers. G. Beauchef (*Le Mois Thérapeutique*, vol. iii, No. 9).

DIPHtheria, MORTALITY STATISTICS OF.

In the wards of the Mülhausen Hospital the average mortality was above 50 per cent.; for 1895 it was 38 per cent., and for 1896 it was 28 per cent. During these two years the serum was used in small quantities and not in all cases. In the years 1897 to 1900, when the serum was used freely, the mortality ranged between 15 and 20 per cent. The effect of the injection of the serum proved beneficial in several ways. When the patients had fever it usually decreased rapidly. All the patients that required tracheotomy required it upon admission, excepting two in whom it was done the day after admission. In one case of albuminuria the serum injection caused it to disappear at once. The causes of death were various: paralysis of the heart, pneumonia, etc. One patient died shortly after admission to the hospital, and one of diphtheria of the bronchioles. The dose of serum varied from 600 to 1500 units, repeated at intervals as appeared necessary. In addition, the children received gargles containing potassium chlorate, and when there was much pain they were allowed to swallow small pieces of ice. In the severe cases the throat was painted with a solution of ferric chloride. The nourishment was of the most concentrated character. In no case was any spread of the diphtheritic process observed after the injection of the serum. Jaeger (*Deutsches Archiv für klinische Medizin*, *bd.* 73, 1903).

ENDOVENOUS MEDICATION.

Endovenous medication is still in the experimental stage and not yet adaptable to general practice; but the recent successes reported by Baccelli, Mariani,

and Barrows must arouse much interest in it. Numerous drugs may be given with certainty and rapidity by hypodermic injection, but still more positive effects can often be obtained by injecting them directly into the circulation. For example, Mariani, by giving an endovenous injection of 130 cubic centimeters of gelatin, stopped instantaneously a copious hæmoptysis in a tuberculous patient. Other drugs that have been administered in this manner include arsenic, iodine, benzoate of soda, antipyrin, alcohol, and silver. All of these remedies proved beneficial in certain diseases of the human subject. Mariani also successfully injected oxygen for the relief of patients suffering with imperfect oxidation. Baccelli had striking success in the treatment of malaria, especially of the deadly pernicious type, by endovenous injections of quinine. Closely related to endovenous medication is the introduction of antiseptics by means of intravascular infusions. We are all acquainted with the attempts made to introduce into the blood some germicide which would successfully destroy the tubercle bacilli in the lungs. The results, as we know, were not very brilliant. Now, however, we have reason to believe from the experiments of such men as Ewing, Maguire, and Barrows, that a germicide may be introduced directly into the blood without harm to the patient and there destroy the micro-organisms if not their toxins. Maguire found, by experiments on animals and on himself, that the maximum strength of formaldehyde to be injected was 1 to 2000 and the maximum quantity 50 cubic centimeters for an adult. He also proved that formaldehyde in the dilution of 1 to 200,000 was a very efficient germicide. It may be inferred, therefore, that formaldehyde in saline

solutions may be injected with safety if the injection be made carefully and slowly, so as not to embarrass the right heart. Editorial (International Medical Magazine, March, 1903).

FEEDING OF INFANTS AND CHILDREN.

The mortality among children under five years of age in large cities is about 40 per cent. of all deaths. Shakespeare figured from the mortality tables of Philadelphia for a period of years that between one-fourth and one-fifth of all children die before ending the first year of life, from diseases of the digestive system. One-tenth of all children do not live a month and one-third die before the age of three months. We all know that infantile diseases are more serious as well as more fatal in those fed by the bottle.

"In the summer of 1894 I had charge of the Infants' Summer Hospital at Charlotte, a Rochester, N. Y., charity, and I here observed the good effects of breast-feeding. This was shown by the fact that only 13 per cent. of the babies treated that year were wholly or in part breast-fed, and that none of these cases was fatal, showing a less severe sickness, a constitution more able to resist disease, or both. A fact accepted largely by the laity, and also, I am sorry to say, by some members of the medical profession, that an increasing number of women cannot nurse their infants has been too prevalent. The result is that artificial substitutes are advised and used when frequently efforts made by the mother under medical advice would result in a supply of breast-milk proper in both quality and quantity. If each mother could be made to believe that her infant would die if not breast-fed, there would be a

large increase in the number of successful lactations.

"When breast-milk disagrees or is insufficient in quantity, it will generally be found that the mother is anæmic, constipated, or otherwise in poor health; that she is not receiving a plentiful, plain diet with abundance of fluids, or that she is not getting enough fresh air and exercise. The drugs usually indicated are iron and laxatives; of these, Bland's pills and cascara may be mentioned. Beer once daily will often correct the tendency to constipation due to the extra amount of milk which is taken." F. J. Mann (*American Medicine*, Feb. 7, 1903).

FELON, TREATMENT OF.

Four varieties of felon are commonly observed: That between the epidermis and skin, that seated in the subcutaneous areolar tissue, that occupying the sheath of a tendon, and that occupying a position between the periosteum and bone. The mode of treatment depends, of course, upon the extent of the pathological process. In the first form an aseptic incision and drainage are all that is required.

The more severe form the author treats in the following manner: The patient is anæsthetized, the operative field made surgically clean, the diseased area freely incised, and all necrosed tissues removed. The part is then cleansed with hydrogen peroxide, followed by mercury bichloride, and then carbolic acid and alcohol. It is again cleansed and the wound closed. E. W. Lee (*New York Medical Journal*, March 21, 1903).

GONORRHOEA IN CHILDREN.

All urethral discharges in young boys should be viewed with suspicion. Such

discharges should be submitted to a microscopical examination. Should the gonococcus be found, the possibility of the case assuming a medico-legal nature should be remembered. The question of rape should be carefully eliminated or conclusively proved. Treatment consists in securing local cleanliness and a free action of the emunctories in conjunction with the administration of urinary antiseptics and alkalies. Vulvo-vaginitis in little girls is very often due to gonorrhœa. H. Lowenburg (*American Medicine*, Feb. 21, 1903).

HEART, REVIVAL OF ISOLATED.

The writer has continued his researches on the possibility of reviving and inducing spontaneous pulsation in the heart of warm-blooded animals two to four, and even five, days after death of the animal. He has succeeded in accomplishing the same in the case of the heart of a three-months infant on the second day after the death of the child from pneumonia. A cannula was inserted in the aorta, as suggested by Langendorff, and warm Locke solution, saturated with oxygen, was forced through the heart. This is a solution of equal parts of CaCl_2 , KCl , and NaHCO_3 , of each, 0.02 per cent.; NaCl , 0.9 per cent.; and dextrose, 0.1 per cent. After this fluid had coursed through the heart for about twenty minutes, almost imperceptible movements were noticed in the right auricle, spreading thence to the right ventricle, whereupon the entire heart commenced to beat. This spontaneous pulsation of the heart continued for more than an hour. The more or less faintly rhythmical pulsation of the ventricles and auricles under the influence of artificial irrigation with the above fluid

was a weird sight, knowing that the owner of the heart had been dead thirty hours.

It remains to be seen whether the facts thus learned will prove of any practical value, but they certainly suggest the possibility that, in exceptional cases, artificial irrigation of the heart with a warm salt solution might possibly be attempted as the very last resort. A. A. Kuliabko (*Journal of the American Medical Association*; from *Russki Vrach*, i, No. 40. 1903).

HERPES ZOSTER AND PNEUMONIA.

Zoster is a pathological condition like pneumonia, with definite lesions of certain sensory ganglia, sensory nerves, and the skin, capable of being excited by a variety of causes. It is probable that the primary ganglionic lesions are commonly due directly or indirectly to the soluble toxins of various micro-organisms. The skin-lesions may be on the head, neck, trunk, or extremities, corresponding to the Gasserian and posterior root ganglia affected. Various forms can be distinguished: Spontaneous or primary herpes, thought by Head, Carpenter, and others, to be a specific infectious disease, the specific causal agent of which has a special affinity for certain sensory ganglia (posterior, spinal, and Gasserian). Herpes occurring after certain definite toxic agents, as arsenic and carbonic oxide gas, etc. Herpes in the course of certain infectious diseases, like pneumonia, cerebro-spinal meningitis, and probably malaria and typhoid. In all three of these forms the ganglia and the skin-lesions are the same and the processes presumably identical. Herpes simplex, so called, affecting the lips and nose in coryza, gastro-intestinal intoxication, etc., and genitals (herpes genitalis), has

not been sufficiently investigated to be classified; no evidence for or against its connection with changes in the nervous system exists. As far as skin changes in herpes are concerned, they are illustrations of particular forms of necrosis and inflammatory reaction, and, as in similar lesions in other organs, can probably be excited in a variety of ways. W. T. Howard, Jr. (*American Journal of the Medical Sciences*, Feb., 1903).

HYPERTROPHY OF THE TONSILS, INFLUENCE OF, UPON THE PHYSICAL AND MENTAL DEVELOPMENT OF CHILDREN.

In a study of the tonsils in a series of schoolboys, three hundred and seventy-five boys were investigated; it was found that the tonsils were enlarged in 62 per cent., that they had caused symptoms in 33 per cent., and that they had produced gross disturbance of hearing in 27 per cent. The enlargement and the symptoms produced thereby were most marked between the sixth and ninth years. The percentages were much lower after the end of the ninth year. The writer also shows that the children that progressed poorly in school were, in over three-fourths of the instances, those with enlargement of the tonsils. Wilbert (*Deutsche medizinische Wochenschrift*, Feb. 5, 1903).

INFANCY, FEVERS OF DOUBTFUL NATURE IN.

Etiological investigation always reveals more or less transgression of dietetic hygiene, as shown by abnormal discharges. Epidemiological investigation shows, on the other hand, that the disease is more frequent during the warm weather and coincides with the development of fever of typhic nature, with the different types and varieties

of gastro-intestinal accidents, in many children under two years of age, and with the remittent prolonged cases of fever in children above that age. Its frequent repetition observed in the same child, and always obeying to the same cause, dissipates all ideas of typhoid or yellow fever: diseases which do not attack the same person twice in accordance with the opinion generally established and admitted. The bacteriological examination demonstrates the existence of great number of bacillus coli communis in virulent condition, as well as of other saprophytes in the potable waters of Havana. Very frequently unboiled water is administered to nursing children. The hæmatological examination reveals the absence of plasmodiæ in the blood obtained from these small patients, as well as the absence of the serum-reaction of Widal. Quinine, even given hypodermically, is useless unless intestinal elimination is previously established. J. L. Duenas (*Journal of the American Medical Association*, March 7, 1903).

INTRACRANIAL TENSION, INDICATIONS FOR OPERATIVE INTERFERENCE IN.

The old classification of concussion and compression of the brain no longer attracts the attention of the surgeon. The phenomena connected with concussion are often transitory, usually not serious, and involve, as a whole, no important lesion of the brain. Concussion has to do with a disturbance of the fluid equilibrium, and is usually of momentary duration. If the concussion is severe, spasm of the vasomotor system occurs, and the condition simulates surgical shock.

Fränkel maintains that without consciousness no concussion can occur, a fact which is of great importance in

medico-legal cases. For example, if a person falls in consequence of syncope, he will not suffer from concussion of the brain. If he falls while conscious he is certain to receive a concussion of the brain if he does not sustain a more serious lesion. In the former case he may suffer from cerebral compression or cerebral pressure, according to the violence and extent of the injury. In the latter case he may escape both of these conditions, and suffer from simple concussion, or he may escape any concussion and suffer from a more serious injury, such as cerebral compression or cerebral pressure. Concussion is a condition found in fractures of the skull as well as in trauma without fracture. The manifestations present vary greatly with the individual. The writer has made an observation from the study of innumerable cases of concussion, that as far as he knows is original. The observation is that, the more highly the nervous system is developed, the more sensitive the patient is, the more highly the intellectual faculties are cultivated, the greater the degree of concussion following head injuries. Children may fall from great heights, and, if not killed outright, may rapidly recover. Frederic S. Dennis (Medical News, March 21, 1903).

LIPOMA ARBORESCENS.

The writer agrees in the main with Stieda's view that lipoma arborescens occurs in a number of chronic joint affections. It is not a lipoma in the sense of being a "new growth," but is merely an hypertrophy of normal pre-existing tissue. Its etiology is a chronic inflammatory condition of the joint, arising usually from tuberculosis or arthritis deformans and possibly also a

condition of negative pressure in the joint.

Pathologically it is an hyperplasia and fatty degeneration of pre-existing synovial tabs, to an extreme degree. Histologically the appearance is that of a typical chronic inflammatory condition, with, in addition, a specific appearance in case of tuberculosis. In an unopened joint diagnosis is not certain, the swelling, tenderness, limitation of motion, and ability to palpate not being absolutely diagnostic. Prognosis of spontaneous healing and recovery of joint function is unfavorable.

The treatment recommended by the author is the following: Arthrectomy (eration) or, when tuberculosis is present, resection of the joint. He differs from Stieda by giving tuberculosis relatively a less important place in the etiology, and urges the importance of the absence of the clinical evidence of joint disease as leading to the diagnosis of a non-tuberculous condition. Exploration of the joint is advised where any doubt exists as to the nature of the pathological process. C. F. Painter (Boston Medical and Surgical Journal, March 19, 1903).

MYOCARDIUM, CHRONIC DEGENERATION OF.

Arrhythmia is invariably pronounced when the musculature of the auricle is in a condition of fibrous degeneration, with or without the involvement of the musculature of the ventricle in the process. On the other hand, degeneration of the auricular appendage, even with advanced degeneration of the walls of the ventricle, is not accompanied by any arrhythmia. B. Francesco (Journal of the American Medical Association; from *Riforma Medica*, Nos. 203-206, 1903).

PHYSICAL TRAINING.

The general trend of the profession is toward drug, rather than therapeutic, nihilism. Physical training along physiological lines is an important department of both preventive and curative therapeutics, and should be taught in medical schools. The profession at large is woefully ignorant of the objects and principles of physical training. The physician should endeavor to attain physiological development, as tending to make a favorable impression on the *morale* of his patients. Such departments of medicine as neurology and surgery, particularly orthopædic surgery, are especially enriched by a knowledge of physical training. The end and aim of physical training should be to utilize the inherent physical capital of the individual and develop it to its normal physiological standard. The individual equation is the keynote of physical training. One should strive to develop and make ready to his command such muscular fiber as normally belongs to the individual subject. A general adoption of physiological muscle-building would cause a marked improvement in the physical strength, endurance, and beauty of the race. Model physiques are much rarer than they should be. Physical and intellectual development should go hand in hand. Neither should be perfected at the expense of the other. The harmonious development of mind and muscle is the most important factor in human society. A more thorough understanding and more general practice of physical training would tend to reduce pauperism and crime, and would materially decrease the expense of our ponderous legal machinery and penal system.

Estimating the developmental neces-

sities and capacity of a given individual by comparative measurements is often fallacious. The idea that an individual of a given height and weight should present definite proportionate measurements of the various portions of the body is absurd. The inherent capacity for muscular development possessed by certain individuals is extreme. The muscular development of a Sandow, under precisely similar conditions, is possible only to Sandow and exceptional individuals of his type. Specialism in muscle-building is justifiable only in so far as it tends to bring up any given portion of the body to the relative proportions normal to the particular individual: *i.e.*, to the normal symmetry.

In beginning the training of adults the occupation should be considered. The muscles of the highly-trained athlete are out of place, useless, and perhaps injurious to the man whose occupation is sedentary. Unused muscular fiber and visceral capacity result in muscular and visceral degeneration. Certain individuals tend to become muscle and joint bound under very moderate exercise, and great care should be taken in prescribing physical training for them. The systematic practice of athletics, when carried to extremes, is likely to develop the athletic habit: *i.e.*, a condition of the body in which cessation of training produces serious impairment of health. Under such circumstances the individual is a slave to training.

Athletic overstrain is frequent, and occurs in two forms: acute and chronic. Its evils are manifested, first, in individuals who are out of condition; second, in individuals who, while in condition, undertake inordinate feats. Serious disturbances of the heart, lungs, kidneys, and liver may result from over-

strain, the heart, especially, being often damaged. Even appendicitis may be produced by athletic overstrain. Competitive athletics, as the term is ordinarily used, are especially dangerous in their effects upon the viscera. The average professional athlete at the age of 30 has exhausted his reserve fund of vitality, and should cease active training and athletic competition.

Symmetrical muscle-building should be a preparation for practical athletics of all kinds. This muscle-building should involve increase of volitional muscular control and a development of the muscles up to the individual normal standard, no attempt being made to put large and bulky muscles upon individuals in whom such muscles are not normal. The first lesson the subject should learn is the necessity of putting his brain-cell in absolute command of his muscle-fiber. The ideal system of muscle-building is that which involves the least expenditure of time and the use of the least apparatus. Abdominal muscle development is the keynote of success in physical training.

Of practical athletics, the best forms are boxing, fencing, and handball. All forms of athletics are most beneficial if practiced in the open air. Golf is admirable in this respect. The element of play should enter largely into all forms of athletics, diversion of mind and cheerful companionship being a *sine qua non* in obtaining the best results.

The writer incidentally introduces a warning against the prevalent idea that an athlete may continue capable of doing his best work until middle life or past it. It must be remembered, he states, that "a man is as old as his arteries." This aphorism is especially pertinent as applied to the athlete. It

is well to remember that the athlete's arteries are, with certain brilliant exceptions, older than those of the average healthy man. As has already been indicated, his muscular power may be at its maximum, although his resistancy and recuperative capacity and visceral integrity may fall far behind it in degree. The man who gets a great deal out of himself physically before the age of 30 is bound to "go back" after that period. "Mr. Edward Hanlon, the famous oarsman," adds the author, "never said a truer word than when he stated that, in his opinion, no man should train for or enter competitive athletics after the age of 30. Such men as Sullivan and Fitzsimmons are notable exceptions, perhaps, yet each of these men is something of a physical freak. So far as both of these men are concerned, the pathetic story of their downfall merely emphasizes the truth of the foregoing statement. Who that has watched the career of some of our phenomenal athletes will not agree that with them the pitcher usually goes to the well once too often? The man who attains supremacy on borrowed energy—energy borrowed from his physiological bank—is called upon to pay his notes sooner or later. He cannot do so, and goes into physiological bankruptcy." G. Frank Lydston (*American Medicine*, March 7 and 27, 1903).

PNEUMONIA AND PSEUDODIPHTHERIA, ASSOCIATED.

It is well known that various cocci, more particularly streptococci, staphylococci, and pneumococci, are almost always found associated with the Klebs-Löffler bacilli in diphtheria, and it is also recognized that several morbid conditions are attended with the formation of membrane or exudate more or less

resembling that of diphtheria, but entirely independent of the Klebs-Löffler bacillus. The organisms present in the last-mentioned class of cases are streptococci, staphylococci, diplococci, and the bacilli of pseudodiphtheria. These bacilli resemble the Klebs-Löffler bacilli to some extent, but can be distinguished from them by a variety of tests. The following cases are interesting as examples of pseudodiphtheria preceding or following an attack of pneumonia.

Case I.—The patient was a boy, 6 years of age, who suffered from pneumonia accompanied with croupy spasmodic cough, which persisted until, after the lapse of fourteen days, he had an attack of measles running a normal course and attended with but slight tonsillitis. After the measles he had another attack of pneumonia, which cleared up in a few days. The entire pharynx was subsequently covered with a dense gray membrane, which disappeared after twenty-four hours. No diphtheria bacilli were found in it, but only cocci. There was otorrhœa preceding and following the attack of measles.

Case II.—The patient was a man, aged 37 years, who suffered from pneumonia, which was followed by rheumatism. While abroad he had contracted dysentery, and his bowels were washed out by enemata on account of constipation. His tonsils were slightly affected; a membrane identical with that presented in Case I was formed on the pharynx and disappeared within twenty-four hours, leaving small ulcers. This false membrane, unlike that of diphtheria, was non-contagious.

Case III.—The patient was a girl, aged 6 years, a swab from whose throat gave indications of the pseudodiphtheria bacillus when examined at the Jenner

Institute by request of the Wandsworth sanitary authority. Bronchitis followed.

Case IV.—This patient was a sister of the preceding one, was similarly affected, and had a sharp attack of pneumonia six days afterward. A memorandum from the medical officer of health stated that such cases “end in recovery, and are not followed by sequelæ.” John Reid (*Lancet*, Feb. 28, 1903).

PULMONARY TUBERCULOSIS, AMERICAN CLIMATES AND LOCALITIES IN THE TREATMENT OF.

Patients in the early stages will usually show improvement with almost any change of climate, such as Liberty, the Adirondacks, Florida, Southern California, or Colorado. In catarrhal cases attended with profuse secretion, El Paso, Texas; Thomasville, Summerville, Aikens, South Carolina; also Colorado and New Mexico. Patients of nervous, irritable, and erethistic temperament do better in a marine climate, and should not be sent to high elevations; in winter Florida or Southern California; in spring, Old Point Comfort or Atlantic City; in summer, South Shore and eastern end of Long Island. Patients with ulcerative tuberculous laryngitis should never be sent to a high altitude. The elevation should be about 2300 feet, and good results have been reported from Florida and Southern California. Slowly progressing patients, especially with fibroid phthisis, do best in a marine climate, such as Florida, coming north by easy stages as the spring advances. Cases of phthisis complicated by heart disease should be kept at comparatively low levels. Cases involving loss of lung substance or the withdrawal of any considerable portion of the respiratory area from the exercise of its functions,

usually fare badly at high elevation. Florida and Southern California are advised. Puny youths, not actual, but probable, cases of tuberculosis, are generally benefited by a prolonged residence in a high mountain region. The tendency to hæmorrhage does not itself furnish an indication either for or against any particular variety of climate. Patients with phthisis accompanied with albuminuria and marked diabetics should be kept near home, and not sent to high altitudes. J. K. Cook (Medical News, March 21, 1903).

RABIES, FORMALIN INJECTIONS IN.

A patient in the Williamsport, Pa., Hospital, suffering from rabies, is reported to have been cured by intravenous injections of formalin solution. His arm had been mangled by a mad dog, and was amputated, but rabies developed later. A rapid fall of temperature and improvement in all the symptoms is said to have followed the administration of the remedy. (Medical Record, March 14, 1903.)

RABIES, RAPID DIAGNOSIS OF.

Hydrophobia presents certain features which are of unusual interest and importance. Aside from the futile efforts to discover the causative agent, the pathology of the disease has been investigated by a number of observers, with no better success. No appreciable lesions which could be considered at all specific have until late been brought to light, and the only pathological alterations found are confined to the nervous system.

This is not the least surprising, in view of the fact that hydrophobia is entirely a nervous affection, the rabie virus or toxin possessing a special

affinity for the nervous tissue. In this respect it closely resembles tetanus, and it is quite possible that also in rabies the causative agent, whatever it is, invades the tissues locally and produces a powerful toxin which affects the nerve-centers.

However, the discovery of a specific lesion is more than a merely scientific problem. On it depends the diagnosis of this disease, and consequently the more rapid and satisfactory treatment. It is evident that the usual method of diagnosis of rabies by means of animal inoculations is entirely too slow a process to be depended on for practical purposes. As a rule, physicians do not wait with the Pasteur treatment until the diagnosis of rabies in the suspected dog is confirmed by animal inoculations, and the latter possess only a scientific value. This urgent necessity for a rapid diagnosis spurred various investigators to the effort of discovering specific lesions in the nervous system, where they would naturally be expected to be present.

Preceded by Benedict, Kolesnikoff, and others, Babès described an accumulation of leucocytes around nerve-cells which he called the "rabie tubercle" and which he considered pathognomonic of the disease. This claim, however, while confirmed by a number of observers, was contradicted by others, and even Babès himself has of late retracted his original views. The consensus of opinion is that Babès's "rabie tubercle" is secondary and inconstant in its appearance. Lately, Van Gehuchten and Nelis described certain pathological alterations in the cells and capsule of the spinal ganglia which they consider specific. These changes consist principally in disintegration of the nerve-cells, chromatolysis, and proliferation of the en-

dothelial lining of the capsule. The observations of these authors were fully confirmed by Hebrant, Nocard, Cuille and Vallée, Bailey, and especially by Ravenel and McCarthy. The latter observers have made a thorough study of these lesions, and so confident are they of their specific nature that they depend almost entirely on their presence for diagnostic purposes. Their position, however, is somewhat weakened by the fact that the same or closely similar lesions were discovered in other affections by Crocq, de Buck and de Moor, and Spiller. Furthermore, the diagnostic value of the lesions is also impaired by the fact that they may be, and usually are, absent in the earlier stages of the disease. Krizshanovsky (Archiv Biologicheskikh Nauk, vol. ix, No. 4, 1902) investigated the cardiac ganglia of rabbits, dogs, and men (two), dead of natural or experimental rabies. In no instance did he find the "rabie tubercle" of Babès, but the changes described by Van Gehuchten and Nelis he observed in all cases, the intensity of the pathological changes being in direct proportion to the chronicity of the disease. Proliferation of capsular endothelium and the invasion of the latter into the spaces formerly occupied by the nerve-cells he observed only in chronic cases. He concludes, however, that these lesions are not specific.

While there is still considerable uncertainty as to the nature of these lesions and their diagnostic value, the conclusion seems to be fully justifiable that, when other canine affections can be excluded by the aid of the history and a careful *post-mortem* examination, the presence of the ganglionic changes is fairly certain evidence of the existence of rabies. Editorial (Philadelphia Medical Journal, March 14, 1903).

SCARLET FEVER, SERUM-TREATMENT OF.

A good deal has been said of late about the serum-treatment of scarlet fever, and much of what has been said has been indicative of confidence in the actual or rapidly approaching achievement of success with the treatment. Of all the recent publications on the subject, those of Prof. Adolf Baginsky, of Berlin, have probably attracted most attention. Those publications, however, while hopeful in tone, have not been characterized by the triumphant style in which the newspapers treat the matter, and a letter from Dr. Baginsky, recently received at the Journal office, states that he is not at present prepared to make any stronger statement than he has already published. In this letter he emphasizes the fact that the credit of preparing the serum most recently and promisingly used by him is due solely to Aronson. While there are very encouraging indications that we are in a fair way to possess an efficient scarlet fever antitoxin before long, it would still be premature to proclaim its actual existence. Editorial (New York Medical Journal, March 14, 1903).

SEASICKNESS.

Despite speculation extending through ages and the experience of millions, we are as much in the dark as to the true cause of seasickness as ever. Nor is its treatment any more efficient to-day than it was when the bold Phœnician sailor passed through the Pillars of Hercules into the tempestuous Atlantic. Secret and other remedies in countless numbers have been vaunted as cures. One enjoying considerable vogue at the present time is an English preparation called "Yanatas," a name formed from the initial letters of the words in the

sentence: "You are now able to avoid seasickness." A study of this preparation made by Prof. C. Binz, of Bonn, has shown that it is essentially merely a 1-per-cent. watery solution of chloral hydrate.

Binz (Centralblatt für innere Medizin, Feb. 28, 1903), in his report upon this preparation, reviews the more recent writings upon the subject of seasickness. O. Rosenbach considers *mal de mer* a kinetosis, for which he makes intra- and inter-energetic (inter-molecular) disturbances responsible. To quote his luminous (?) phraseology, the phenomena of a kinetosis ensue when particularly strong and unusual impulses—*e.g.*, the movements of the ship—so endanger the artificial internal equilibrium of the entire organism, or of its parts, which is maintained through a special form of surface tension, that the existing reactive forces (the latent surface energy) are not capable of restoring the normal relations of the constituent parts. W. Janowski attributes seasickness to a mild form of oft-repeated cerebral concussion. C. Schwerdt considers that the disease is due to a rapid exhaustibility of the nervous and muscular elements, as well as to an augmented irritability of the center of equilibrium. He believes that on board ship the function of the diaphragm is inhibited in its upward and downward movement, causing diminished gaseous exchange in the lung and the accumulation of blood and lymph in the abdominal cavity. This brings about a double source of CO₂ accumulation in the system. A careful observation of suffering fellow-travelers has led Binz to formulate another theory, namely: that seasickness is dependent upon an acute anæmia of the brain. The first symptom of the af-

fection is a marked pallor, bordering upon that of chlorosis; then come nausea, retching, and vomiting. Binz believes that, inasmuch as the external carotid, which supplies the blood to the face, derives its vasomotor impulses from the same sympathetic source as the internal carotid, which supplies the blood to the brain, anæmia in the territory of the external carotid doubtless means anæmia in the distribution of the internal carotid. To prove this, he has made the following experiment: He trephined the skull of an albino rabbit; and, with a loupe, observed the exposed portion of the brain, while an assistant kept in view the animal's ear. It was found that the vessels of the latter and those of the surface of the brain dilated and contracted synchronously. It is admitted by Binz that this does not permit of conclusion that during the rocking motion on ship the same thing occurs in man, and that the condition of the parts supplied by the external carotid must correspond with that of those supplied by the internal; but there is still less proof for the opposite view.

In the animal experiments it was not possible to produce vascular spasm by prolonged rocking. Cerebral anæmia causes nausea and vomiting, as may at times be observed in conditions of slow hæmorrhage. It has been noted during seasickness that after the retching act there is a momentary feeling of relief. This Binz attributes to the increased afflux of blood during the straining, which counteracts the cerebral anæmia. His view of the causation of the disease is also borne out to some extent by the fact that experienced travelers that are subject to seasickness assume a horizontal posture as soon as they come on board the ship, even before the harbor has been left.

Binz sums up his observations in the following conclusions: 1. The rocking of the ship produces a contraction of the arteries of the head and therefore an acute anæmia of the brain. 2. This acute local anæmia has as its consequence nausea and vomiting. 3. The movements in the abdominal press (?) produced by the retching and vomiting force a large amount of blood into the brain, remove the anæmia for the moment, and thus interrupt the malaise. 4. The stomach in seasickness plays only a passive rôle. The vomiting act is centrally excited, whether the stomach is full or empty. 5. Everything that tends to increase the flow of blood to the brain thereby acts prophylactically, ameliorating, or curatively upon seasickness.

In the last instance, however, we have as yet no explanation of why the rocking of the ship causes contraction of the vessels of the head; but this is no stranger than the contraction and dilatation of the cephalic arteries during strong emotion. For the treatment of the disease there is, in the first place, the horizontal posture, then remedies that cause dilatation of the vessels of the brain. Among these may be mentioned chloral hydrate, which may be taken in doses of 0.3 gram (5 grains) three or four times within a few hours, and amyl nitrite in doses of 2 or 3 drops by inhalation. Potassium bromide and antipyrin in not too small doses have also been recommended, and theoretically at least appear to be of value. R. Heinz advises rapid breathing, which, as is well known, has a tendency to lessen ordinary nausea.

Binz also recommends that a full meal be taken before boarding the ship. Riesman and Kelly (*American Medicine*, March 14, 1903).

SMALL-POX AND CHICKEN-POX, PARASITES OF.

As a result of investigations carried on for a period of over five years, these tentative conclusions are formulated: 1. There are present in the blood of patients having hæmorrhagic small-pox small, spherical, highly-refractive bodies. They resemble fat, but do not stain with osmic acid. They are found in large numbers from the third or fourth day till death. In confluent small-pox similar bodies appear on the third or fourth day, and are found occasionally after the first week and abundantly in the early stages of both small- and chicken-pox. 2. These bodies are found in cross-sections taken from hæmorrhagic areas. They also appear in the lymph-spaces of the skin and in cavities of the smaller blood-vessels. These bodies are morphologically similar to the first mentioned, but differ slightly in their staining reaction. In smears from vesicles the bodies are usually present, and, as the pocks grow older, these clear bodies increase in size until they occupy the greater part of the cell, while at a still later date they are found apparently in a free state. They present no form of nucleus. It is interesting to note the absence of pyogenic micro-organisms, both from the smears and skin sections. R. S. Thomson and John Brownlee (*British Medical Journal*, Jan. 31, 1903).

SUPRARENAL EXTRACT, ACTION OF.

Prolonged contact of the blood with the extract does not deprive the latter of its effect on the blood-pressure. Intravenous injections of adrenalin in rabbits in which the blood-vessels of one ear were deprived of the vasomotors showed a branching of the ear of the operated side, which lasted longer than that on the normal side. Following

this the normal ear became perceptibly more congested than before the injection. This seems to show that the extract favors vasodilation when the central nervous influence is intact; when the latter is absent, constriction results. The authors also demonstrated that subcutaneous injection in the normal animal had no effect on the pupil and very little constricting effect on the blood-vessels, but when the sympathetic nerve was cut the pupil remained dilated for a considerable time, and vascular constriction also lasted for an equal period. S. J. and C. Meltzer (*American Medicine*, Feb. 7, 1903).

SYPHILIS, IMMUNITY IN.

Does there exist an individual, natural immunity to syphilis? The answer to this question cannot yet be given, according to the writer. A more practical question, and one more readily answered, is whether or not immunity follows an acquired or inherited attack of syphilis. The belief was long current among practitioners that acquired syphilis imparted immunity to reinfection for a prolonged period. Cases were frequently cited in which reinfection had occurred; but unfortunately the evidence was never beyond criticism, and the belief in acquired immunity remained. Furthermore, it has been assumed (the so-called law of Profeta expresses this view) that the descendants of syphilitics possess a certain degree of immunity. As a matter of fact, Profeta did not make the sweeping generalization which is nowadays ascribed to him, but merely said that a symptom-free child, born of a syphilitic mother, can be suckled by its own mother or by a syphilitic wet-nurse without becoming infected.

The author flatly contradicts the ex-

istence of an inherited immunity, as expressed in the law of Profeta, as commonly quoted. He observed epidemics of syphilis among school-children in villages in Asia Minor, notwithstanding the entire adult population of these villages bore signs of previous syphilitic attacks. In many instances fresh syphilis occurred in children whose parents were unquestionably syphilitic before the children were born. In children presenting saddle-noses and other marked signs of advanced syphilis (probably hereditary) there frequently was present fresh, newly acquired, contagious specific disease. Assuming that the first attack was acquired and hereditary, these children at any rate suffered two separate attacks of syphilis; of their reinfection the writer has no doubt, and he therefore announces himself as unequivocally opposed to the hypothesis of immunity. Van Düring (*Medical News*; from *Berliner klinische Wochenschrift*, Jan. 5, 1903).

THERAPEUTICS, NEW TENDENCIES IN.

In an able paper read at the Cairo Congress of Medicine, December, 1902, Prof. Charles Bouchard, of Paris, drew attention to the success obtained by himself and others in treating local manifestations of certain general diseases by the topical application of specific remedies. Moreover, he showed that curative results ensued, although a very small dose of the agent was employed. For instance, a syphilitic patient, who had an ulcerated gumma of the lumbar region, had received treatment with mercury and iodide of potassium, these drugs having been used singly and afterward in combination. Mercury had also been applied by friction with mercurial ointment, and by hypodermic injection of mercurial salts

in those parts of the body usually selected for such methods, but at some distance from the seat of the lesion. These treatments not having proved effective, Bouchard injected subcutaneously into the periphery of the gumma, at first 1 cubic centimeter, and subsequently 2 cubic centimeters of a solution of iodide of potassium, each cubic centimeter containing 3 centigrams of iodide of potassium ($\frac{6}{13}$ grain). After seven such hypodermic injections of from 3 to 6 centigrams of iodide of potassium ($\frac{6}{13}$ to $\frac{12}{13}$ grain), the gumma sank below the level of the patient's skin and cicatrized. Under similar conditions, after experiencing failure from a general treatment with specifics of another patient, who had a gumma, the tumor disappeared after three injections, containing 6 centigrams each of iodide of potassium ($\frac{12}{13}$ grain). Bouchard does not discredit general specific treatment in syphilis; he thinks it is always required; but he holds that, with or without general treatment, a practitioner, by employing the local treatment indicated above, can cure an isolated lesion, or one the progress of which has been checked, and may thereby rapidly get the better of certain unsightly, painful, and dangerous manifestations of syphilis, such as those appearing on the face, the eye, and the tongue. He even hopes that in the future we may succeed in thus curing the deeper lesions of syphilis.

In rheumatism (not the gonorrhœal form) equally beneficial effects have been obtained from hypodermic injections of salicylate of sodium. This result has been more particularly observed when the rheumatic affection is no longer increasing, or when it no longer exists as a general disease, but has left

certain persistent vestiges behind it, and especially in cases in which it assumes a local type at the very beginning of the attack.

Bouchard states that an injection *in situ* of 3 centigrams of salicylate of sodium ($\frac{6}{13}$ grain) cured a case of marked arthritis, and that he cured a case of arthritic effusion into a joint by injecting 10 to 20 centigrams of this salt ($1\frac{7}{13}$ to $3\frac{1}{13}$ grains), dissolved in 2 and 4 cubic centimeters of water, respectively. He also tried it successfully in sciatica, in the severe neuritis of zona, and also in painful muscular contracture of the adductors of the thigh, making the injections into the tendinous insertions of these muscles. He has several times observed that, in cases of commencing pleurisy, an injection of the salicylate has relieved the pain in the walls of the thorax and caused the pleurisy to recede. He guards himself by saying that, even when successful in relieving rheumatism of an acute or an erratic type by this treatment, the practitioner should not consider it as all-sufficient. It lowers febrile temperature if the disease is monarticular; but does not prevent the development of arthritis in other joints, or the invasion of the larger serous membranes. In such cases general treatment must be continued. If it is insufficient, the local treatment will prove useful.

Bouchard thinks that the rationale of cure by his method is that the specific acts on the diseased part in a proportion which renders it antiseptic to it without its ulterior diffusion into the surrounding parts of the organism rendering it a toxic agent. He illustrates this remark by showing that, if 5 grams of sulphate of quinine were dispersed through the totality of the

body of a man weighing 50 kilograms, this man would have in each kilogram of his body, and consequently in each kilogram of his nervous system, 1 decigram of the drug, which might be sufficient to cause his death. But the quinine could be introduced into the man's cellular tissue in the proportion of 200 to 1000, a proportion 2000 times stronger, without doing any damage to the cellular tissue.

He also thinks it possible that the hypodermic injection of specifics in small doses may excite solicitation of the natural acts by which the animal economy struggles against infection.

Bouchard shows that the ophthalmic surgeons have preceded general practitioners in local therapeutics by applying specific and non-specific medicines, mercury, iodine, eserine, atropine, and pilocarpine as closely as possible to the diseased parts. In applying local treatment to the local fossæ to relieve coryza, the practitioner seeks to prevent a generalization of an infection toward the respiratory organs. The local application of cocaine to the nasal mucous membrane arrests an epistaxis, even when due to a cirrhosis, and a few drops of a 1 to 1000 solution of adrenalin applied superficially to a bleeding pile arrests the hæmorrhage and causes the pile to wither. On two occasions he has observed a disquieting hæmoptysis checked by a hypodermic injection of adrenalin made into the trachea.

He stated that, while medicine combats infections by general means, it employs the local method more and more, either because the latter exercises an antiseptic effect or because such treatment evokes antitoxic acts in the organism, and by such means becomes really curative. He finished by declaring that modern therapeutics seeks its

inspiration in the doctrine of infection, which is the principal medical glory of the nineteenth century, and which will receive further expansion during the twentieth century, thus preserving the teaching and the memory of these two benefactors of all the ages, Pasteur and Lister. Editorial (*Canadian Journal of Medicine and Surgery*, March, 1903).

TUBERCULOSIS, OPEN-AIR TREATMENT OF.

The writer emphasizes in the following lines the fallacy of "half-measures" in carrying out this therapeutic measure:—

"As soon as we have made our diagnosis of pulmonary tuberculosis, it is our duty at once to put our patient on the most thorough open-air treatment that his circumstances will allow. Let there be no half-hearted measures. No windows a little open in the day and just a crack open behind blinds and curtains at night. No little meals sent away half-eaten; no going away for change of air, which merely means a change from one stuffy room to another and from one set of injudicious friends to another set still more injudicious. If your patient is poor, if possible, send him away to an open-air sanatorium; if that is not possible, do your best for him at home with windows open day and night in all weathers, with a deck chair in the garden or under a shed and with a nourishing and abundant diet, which must be eaten. We have seen wonders done with no better means. If your patient is not poor your duty is still much the same. The patient should, if possible, be sent off to a sanatorium at the earliest opportunity. If the patient is only moderately well off, the chance of permanent recovery is afforded by undergoing the treatment

in the climate in which he will have permanently to live." P. S. Hichens (British Medical Journal, March 14, 1903).

TUBERCULOSIS, SANATORIUM TREATMENT OF.

The sanatorium for tuberculosis should be located at an elevation of about 2000 feet whenever possible, and in a region having pure and stimulating air. In the manner of exercise and feeding there are no hard-and-fast rules applicable to all cases. Each individual is a law unto himself, and should demand treatment irrespective of the class to which he belongs. From the statistics of Trudeau, it might be said that the minimum term of residence for a simple and uncomplicated case should not be less than three months, whereas for the moderately advanced incipient cases the minimum should be six months. After "an economic cure" it is often practicable to allow the patient to return to his home, if the latter lives amid healthful surroundings. The patients do not find the discipline of such institutions irksome. At the Loomis Sanatorium the newly-admitted patient is sent to the infirmary for examination and observation, and is usually placed in bed. The history is taken in accordance with a printed chart, so as to secure uniformity and thoroughness of record. The newly-admitted patients are compelled to rest for the first few weeks, using a reclining chair on the veranda for from six to ten hours a day, the amount of out-door exposure being regulated in accordance with the weather. During the night the patients sleep in a room with the windows wide open, and in the early morning a nurse closes the windows and warms the room before the patients get out of bed.

After this period of enforced rest an average pulse-rate of 100 or more while the patient is at rest contra-indicates exercise, as does also a rectal temperature in the morning of 99° F. or an afternoon rise to above 100° F. The failure to increase in weight is also looked upon as a contra-indication. The first exercise should be in the nature of an experiment, and should not be more than a quiet walk for a few hundred yards. After this some slight and simple chest exercises might be employed, and then, still later, hill-climbing can be cautiously tried. It should be the rule to insist upon rest before and after meals for those patients who exercise.

With the ordinary patient, unless the weight is far below normal, three hearty meals a day should be given if the patient is out in the open air. Forcing the diet beyond the point of comfort is an unwarranted practice, and is sure to be followed by indigestion. There is this advantage in forced feeding, that the stomach which rebels against any food becomes accustomed to a fair quantity of food, and the patient is soon able to take a fair quantity of food in the usual way. It has been proved very conclusively that tubbing for the reduction of temperature in septic cases of tuberculosis is not only of little avail, but actually harmful. On the other hand, tepid sponging or the employment of the wet pack in such cases is to be recommended, and has proved very valuable in controlling the fever. The refinements of hydrotherapeutics are useful when elimination is deficient and appetite and digestion imperfect. In the summer no difficulty is experienced in selecting suitable recreation. Golf is healthful amusement, but only short plays should be allowed, except for those

whose condition is exceptionally good. H. M. King (Medical Record, Feb. 21, 1903).

URETHRITIS, ACUTE, IRRIGATION IN.

It is generally believed that the object of such treatment is to abort the attack by the bactericidal action of the fluids used. This would be an impossible accomplishment, since any solution strong enough to kill the gonococci would also kill the lining mucous membrane of the urethra. The irrigations merely keep the urethra clean, and the solutions used in virtue of the temperature at which they are employed and their slightly irritating qualities increase the blood-supply and phagocytosis, and so lead to cure. Some consider that the risk of infecting the posterior urethra is increased. The author believes that posterior urethritis occurs less frequently in patients treated by irrigation than in those treated by other methods. It is thought by others that the method should only be used after the most acute stage has been passed. This belief is also erroneous. Irrigations should be begun as soon as the diagnosis has been made.

The writer claims the following advantages for irrigation: A great increase in comfort; in the vast majority of cases a speedier recovery; a somewhat lessened liability to the complications which attend the acute stage; probably a very considerably decreased liability to the late complications. He recommends either a potassium permanganate solution of 1-10,000 to 1-8000, or a silver nitrate solution of 1-15,000 to 1-10,000. Both solutions should be gradually increased in strength, and the second one is probably more effective in the chronic than in the acute stage. The temperature of the solutions should

be a little over 100° F. and 1 or 2 quarts should be used at one time. When it is possible, two irrigations a day should be given for the first week, then daily for another week, then twice a week till the condition is cured. The author concludes that, while irrigation is at times and in occasional instances disappointing, it gives in acute urethritis the best individual results. It offers the patient the greatest immediate comfort, the greatest immediate safety. As prompt, if not more prompt, recovery takes place than by any other means, while there is more certain recovery and less probability of late complications. A. L. Chute (Boston Medical and Surgical Journal, Feb. 12, 1903).

VACCINATION, TECHNIQUE OF.

A wide area on the arm should be cleansed with pledgets of cotton moistened with alcohol. The pledgets should be changed until the cotton is no longer soiled when through rubbing. After breaking off the ends of the capillary lymph-tube, the drop of vaccine-lymph is to be ejected on to the arm. With the sterile scarifier or needle, the transparent or translucent lymph should be scarified through so lightly as not to draw blood, and a checker-board pattern made from one-third to one-half inch square. Then with the side of the scarifier or needle the lymph may be farther rubbed over the scarified area.

By this method of scarifying through the lymph the vaccine is carried by the scarifier under the skin and, in a manner, introduced hypodermically. A large shield should be used, which had better be removed after the second day so as not to constrict the circulation and cause a local cedema; a clean, dry dressing is then to be applied, which should remain on until after the scab comes

away. If the arm becomes inflamed it should be supported at day-time and elevated on a pillow at night. A 1 to 5000 moist bichloride dressing may be applied twice a day, or a 20-per-cent. mercuric ointment or 5-per-cent. ichthyol ointment may be gently rubbed over the inflamed area and applied over the pustule daily and protected with a dressing. Ungt. hydrargyri and ichthyol are both readily absorbed antiseptics, and soon allay inflammation. M. Metzenbaum (Amer. Med., Jan. 17, 1903).

VENOUS HUMS.

The state of the blood and its relation to venous hums are summarized by the writer as follows: Cervical bruit present, hæmoglobin, 90 per cent.; cervical bruit present, hæmoglobin between 75 and 90 per cent.; cervical bruit present, hæmoglobin below 75 per cent.; no cervical bruit present, hæmoglobin below 75 per cent. He considers the cervical murmurs under two heads: (1) the true venous hum, which is quite characteristic: (2) a soft systolic. There are also the rough systolic, due to sclerotic changes in the arteries, and the diastolic murmurs of aortic insufficiency. The last two must not be confounded with the bruit under consideration. C. N. B. Camac (Medical News, March 21, 1903).

YELLOW FEVER. THE MOSQUITO AND.

The reasons for believing that the only way in *nature* by which yellow fever can be propagated is by the mosquito are seven: 1. Havana has been freed of yellow fever and has remained so for the past fourteen months, and this result was accomplished by basing all the sanitary precautions on the theory of the mosquito origin of the disease. That the brilliant results obtained were

not a mere coincidence is proved by the fact that never before, in a period of about one hundred and forty years, has this occurred. 2. That an infected mosquito is capable of giving the disease has been proved by twenty-one actual experimental inoculations upon human beings. That the cases of diseases so produced were really cases of true yellow fever is proved, first, by the fact that the confirmatory diagnosis was made by an expert commission; and, secondly, that three of the inoculated subjects died and the autopsies performed upon them showed all the characteristic lesions of yellow fever. 3. The elaborate experiments undertaken with the object of trying to infect people by bringing them in contact with infected fomites all proved negative, yet the subjects of the experiments were all carefully selected non-immunes and some of them subsequently contracted yellow fever. 4. The mosquito theory of the propagation of the disease is the only one that is capable of satisfactorily explaining all the facts that are known concerning the disease. The other parasites are not capable of transmitting the disease, as is shown (5) by the fact that the successful crusade against yellow fever in Havana was conducted by waging war upon the mosquito alone, and during the whole period that the disease has been kept under, Havana has been harboring a non-immune population of some 40,000 souls, while being infested, as it always is, with bed-bugs and fleas. 6. Analogy is against the supposition that other parasites could be capable of propagating the infection. All the other diseases we know of that are transmitted by a parasite are capable of being transmitted *only* by a specific parasite, and in no other way. 7. All who witnessed the experiments with yel-

low fever and who by education were capable of forming a scientific opinion believed that the mosquito was the parasite that conveyed the disease, and that there was no other way by which the disease could, by nature, be transmitted. J. W. Ross (*Medical Record*, Jan. 24, 1903).

PROPHYLAXIS OF VENEREAL DISEASES.

At the last (fifty-third) meeting of the American Medical Association, held at Saratoga Springs, June 10-13, 1902, a joint resolution from the Sections of Cutaneous Medicine and Surgery and Hygiene and Sanitary Science was introduced in the House of Delegates as follows:—

“WHEREAS, There is a burning necessity to check the spread of venereal diseases, and, assuming that the States cannot with impunity ignore the condition, it lies in the province of the medical profession to discuss and recommend to the respective State legislatures and municipalities means not regulamentative, but social, economic, educative, and sanitary in their character, to diminish the danger from venereal diseases.

“RESOLVED, That the Section on Cutaneous Medicine and Surgery of the American Medical Association invite the section on Hygiene and Sanitary Science to co-operate with the Section on Cutaneous Medicine and Surgery in bringing about a propaganda in the different States looking toward a proper recognition of the dangers from venereal diseases, and to arrange for a national meeting under the auspices of the American Medical Association for the prophylaxis of venereal diseases, similar to the International Conference for the Prophylaxis of Venereal Diseases, which meets again this year at Brussels, under the authority of the Belgian Government.”

This was later submitted to the House of Delegates, which indorsed the action of the Sections and adopted the following:—

“RESOLVED, That a joint committee of six from the Sections on Hygiene and Sanitary Science and Cutaneous Medicine and Surgery be appointed by the President to stimulate study in and uniform knowledge of the subject of the prophylaxis of venereal diseases and to present to the American Medical Association a plan for a national meeting, similar to the International Conference for the Prophylaxis of Venereal Diseases, which meets again this year in Brussels, under the auspices of the Government of Belgium.”

The Committee on Prophylaxis of Venereal Diseases consists of Dr. Henry D. Holton, chairman, Brattleboro, Vt.; Dr. Ludwig Weiss, secretary, 77 East Ninety-first Street, New York City; Dr. George M. Kober, 1600 T Street, Washington, D. C.; Dr. W. H. Sanders, Montgomery, Ala.; Dr. L. Duncan Bulkley, 531 Madison Avenue, New York City; Dr. Frank H. Montgomery, 100 State Street, Chicago, Ill.

The peculiar social, racial, and political conditions of our country are so different from those on the Continent that they necessitate an expression of solely American ideas on this mooted question, both from a socio-economic and sanitary point of view.

The committee desires the support of the medical profession and the aid and powerful collaboration of the medical press of the country to help them in this work. It takes the liberty of soliciting expressions and views editorially and otherwise, and would be glad of personal correspondence from those supporting the movement and who will contribute by papers, etc., to make it a success in case the House of Delegates should favor the holding of such a congress.

Books and Monographs Received.

The editor begs to acknowledge, with thanks, the receipt of the following books and monographs:—

The Practical Treatment of Stammering and Stuttering, with Suggestions for Practice and Helpful Exercises. By George Andrew Lewis. And a Treatise on the Cultivation of the Voice, with a Discussion of Principles and Suggestions for Practice. By George B. Hynson. Detroit, 1902.—The Use of the Electric Caustery Clamp in the Treatment of Cancer of the Uterus. By Charles P. Noble, Philadelphia, 1902.—The Technic of Vaccination. By Myron Metzenbaum, Cleveland, Ohio, 1903.—Two Erroneous Surgical Decisions in Intestinal Perforation from Typhoid Fever. By John B. Roberts, Philadelphia, 1903.—Two Cases of Deciduoma Malignum. By Charles P. Noble, Philadelphia, 1902.

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Sajous's Analytical Cyclopædia of Practical Medicine.

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CANCER AND ITS CURATIVE TREATMENT.

THE *Medical News* of April 25, 1903, introduces among its "Echoes and News" the following lines: "Captain Rost of the Military Medical Service, who has been investigating malignant cancers bacteriologically at the Rangoon Hospital for three years, announces what is believed to be an important discovery. He has found in both carcinomata and sarcomata cancers distinct germs of saccharomy-

cetes, which can only develop when the natural chlorine in the tissues falls below the normal quantity. Following this clue, Captain Rost devised a treatment to re-enforce the chlorine by special diet, enabling large quantities of common salt, which contains chlorine, to be absorbed. He has experimented with eight patients. One was completely cured and the condition of the others was improved. He will continue his experiments."

Commentary.—We have tried to trace this report to its source, but after a perusal of various British and Indian journals were unable to find the original article. The observations of Captain Rost are of particular interest to us, because they indirectly confirm conclusions to which we were led by our inquiry into the nature of cancer, which conclusions differed from any previously propounded. As they are incorporated in our work, "The Internal Secretions and the Principles of Medicine" (*vide* page 785), we cannot do better than reproduce them from the book itself:—

"Certain growths, particularly the more malignant forms, sarcoma and carcinoma, seem closely connected with adrenal insufficiency and its normal consequences. We have seen that trypsin, fibrinogen, and the oxidizing substance [adrenoxin] were simultaneously necessary to insure the destruction of cells even *in vitro*, and, furthermore, that this process required, in addition, *the presence of alkaline salts*. That the destruction of wornout or degenerated cells is a function of these very elements in the blood is evident. Insufficiency of the adrenals, therefore, by reducing the relative proportion of these four constituents in the bloodstream, must correspondingly inhibit this physiological process in all parts of the organism.

"As to sarcoma, the similarity between the cellular elements of the small round-celled variety and mononuclear leucocytes is striking; each cell shows its nucleus, fibrils, and granules, though, of course, more or less modified, owing to abnormal environment. The large round-cell sarcoma recalls the metamorphosis into epithelial cells which eosinophiles undergo in the pulmonary alveoli; indeed, the cells of melanosarcoma contain the blood-pigments themselves. Grouped as sarcomata are now, according to the variety of connective tissue which forms their frame-work, we have, as is well known, myo-, lympho-, fibro-, myxo-, glio-, osteo-, chondro-, myelo-, melano-, angio-, and finally neuro- sarcoma, all of which clearly indicate that any part of the system in which nutrition is, from one cause or another, relatively impaired, may become the seat of this malignant growth, or rather of a *local accumulation of the aberrant or wornout cells which enter into its formation*. The great vascularity of these growths suggests an effort of Nature to cause their elimination, but mitotic proliferation is alone induced, the blood being deficient in the four constituents which should insure destruction of the morbid cellular elements.

"Apart from the marked vascularization peculiar to sarcoma, the same patho-

logical process obtains, it seems to us, in cancer, although here we are dealing with a localized accumulation, retention, and proliferation of epithelial cells. Their multiplication *in situ* occurs (as in sarcoma) partly in virtue of the fact that they 'cannot fully utilize the assimilated material in the performance of [their] specific functions,'¹ and partly because the potential energy of their nuclei becomes converted into sufficient heat-energy (with what oxidizing substance reaches them) to induce proliferative activity. Ritter² found the nuclear chromatin to be precisely that of normal tissue, and the cellular karyokinesis to differ in no way from that observed in the normal physiological process.

"Adrenal insufficiency also accounts for the complications witnessed. As the accumulated elements degenerate, toxic products of decomposition enter the blood and, by lowering the functional activity of the anterior pituitary body, finally bring on the cachectic stage. The foci of retained cellular elements become also more numerous: *i.e.*, 'metastasis' occurs in one or more regions. That the adrenal system is primarily at fault is also suggested by the predilection of the aged to malignant growths, the recognized influence of 'general debility,' localized malnutrition as a result of trauma, cicatrices, etc., and by the fact that the only internal remedies that have proven of any value whatever are powerful adrenal stimulants: erysipelas toxins (Fehleisen), erysipelas and bacillus prodigiosus toxins (Coley), thyroid extract (Dorland), lysol and iodine (Behle-Luckau), sodium cacodylate (Benoit), and the better known arsenic, quinine, etc.

"Owing to the adrenal stimulation induced, the four constituents capable of disintegrating the morbid cellular elements, trypsin, fibrinogen, oxidizing substance, and alkaline salts, are supplied to the blood, and these, under normal circumstances, should cause disappearance of the growth. But unfortunately such a result is but rarely reached even under the violent adrenal stimulation which Coley's toxins must cause. How account for this? The Roentgen rays, as suggested by the results already obtained, seem to us to supply one of the missing factors upon which the curative process depends, *i.e.*, a local accumulation of heat-energy and a congestive process through which neutrophile leucocytes (owing to their phagocytic and fibrinogenic properties) are caused to immigrate into the growth in large numbers, to convert the degenerated cellular elements into benign products. Here, again, however, *the curative process requires alkaline salts* in addition to those normally utilized by the organism, in order to insure the full hæmolytic activity of the tryptic intraphagocytic digestion. The frequent use of saline solution thus asserts itself as the remaining measure indicated to insure success in the bloodless treatment of malignant tumors."

Since the first volume of our work has appeared, investigations in other lines (to be presented in the second volume) have but confirmed the foregoing deductions

¹ Adami: British Medical Journal, March 16, 1901.

² Deutsche medicinische Wochenschrift, June, 1901.

and have suggested thyroid extract as the most effective adrenal stimulant among those enumerated above (though arsenic has been more extensively used) as indicated in cancer, in addition to the use of Roentgen rays and saline solution.

So far thyroid extract has mainly been used for cancer of the breast in connection with oöphrectomy. Beatson,³ among others, resorted to this compound treatment in several cases, a few of which appear to have been greatly benefited.⁴ Page and Bishop,⁵ however, caused the entire disappearance of a carcinoma of the breast in a woman, 61 years of age, by the use of thyroid extract alone, beginning with 3 grains and increasing until 15 grains were given daily. At the time of the report, two and a half years later, the patient was well and no trace of the neoplasm could be discovered. While these results do not warrant the acceptance of thyroid extract as a specific in the treatment of malignant growths, they nevertheless suggest that it exerts a beneficial influence.

The Roentgen rays have now asserted their beneficial powers in a large number of cases; and, if Captain Rost's observations prove sound, the three indications which our analysis of the question has suggested, (1) *adrenal stimulation*; (2) *accumulation of heat in the growth*, and (3) *alkalinization of the cellular elements*, may be satisfied by agencies which have shown individual curative properties. On the other hand, the failures recorded to the credit (at least so far) of thyroid extract and the x-rays seem to be accounted for by the fact that, used singly, they prove active only in cases which are structurally or pathologically adapted, so to say, to their effects. It seems to us, therefore, that recovery might be hoped for in at least a majority of cases of malignant growth by the *simultaneous* use of:—

1. Thyroid extract (or, if not well borne, suprarenal extract, iodide of potassium, or biniodide of mercury).
2. Frequently repeated hypodermoclysis.
3. Roentgen rays.

To avoid recurrence, thyroid extract in small doses, or strychnine, to sustain the functional activity of the adrenal system, and a diet rich in chloride of sodium, such as that employed by Captain Rost, appear indicated.

C. E. DE M. SAJOUS.

THE PITUITARY BODY AS "AN ORGAN OF THE GREATEST IMPORTANCE TO THE ECONOMY."

In a study of the early diagnosis of tumors of the pituitary body Fuchs⁶ introduces the following remarks, which we reproduce *verbatim* as abstracted by the *Edinburgh Medical Journal*, April, 1903:—

³ Lancet, July 11 and 13, 1896.

⁴ British Medical Journal, October 19, 1901.

⁵ Lancet, May 28, 1898.

⁶ Wiener klinische Wochenschrift, February 8, 1903.

"Very important in this connection is the influence exerted by the hypophysis cerebri upon the bodily metabolism. Until quite recently all diseased conditions of this organ were regarded as equivalent to acromegaly. Various authors have written on the subject, to different effect; but it seems clear that, in the absence of acromegaly, disease of the pituitary body may give rise to other trophic and nutritional symptoms, such as rapidly developing adiposity or changes in the skin closely resembling those in myxœdema; and that such symptoms, combined with more recondite signs of the presence of cerebral disease, may be held to suggest a lesion of the hypophysis cerebri [the pituitary body]."

An experimental study of the function of the pituitary body also led Domenico Pirrone⁷ to conclude from his observations that: "1. Not all the symptoms following hypophysectomy are referable to the suppression of the functions of the pituitary body. 2. The results of the suppression of its functions are disturbances of mobility, great depression, rapid emaciation, cachexia, and death. 3. The symptoms due to trauma are referable to the vascular and respiratory systems and the temperature. 4. Total ablation of the pituitary body does not alter the chemical composition of the urine. 5. Although the exact functional mechanism of this gland is not as yet well understood, it is evident that this organ is of the greatest importance to the economy. Although a partial lesion is compatible with existence, its total removal leads irrevocably to death."

Commentary.—These abstracts speak for themselves, and suggest that our conception of the functions of this organ is based on a solid foundation. On page 112 of the commentary appended to Dr. Wasdin's article in our March issue we outlined the influence of partial lesions, tumors, hypertrophy, etc., upon the pituitary body. What Pirrone ascertained experimentally we found to be shown by pathological and clinical evidence. We then wrote: "The numerous cases of acromegaly and tumor of the pituitary body already recorded clearly suggest that, as is the case with the adrenals, the functions of the organ continue a long while, notwithstanding the considerable destruction or disorganization that a local or adjacent disease may entail."

C. E. DE M. S.

Cyclopædia of Current literature.

ANTITOXIN, COMPLICATIONS ATTENDING USE OF.

The writer gave 4000 units of anti-toxin to a woman suffering from diphtheria of the throat. A few days later convalescence was established, but a severe urticaria set in. A sudden attack of dyspnœa, with lividity and pain

around the heart, then came on, and suggested angina pectoris. This, however, could be ruled out, and it seemed that the serum was at fault. In the next few days nine successive attacks occurred, and then recovery was uneventful. It was subsequently found that two years previously she had been given anti-

⁷ La Riforma Medica, February 25, 1903; Medical Record, April 11, 1903.

toxin for diphtheria and similar symptoms of dyspnoea and lividity had occurred. A. Reckles (*Quarterly Medical Journal*, Yorkshire, Feb., 1903).

BROMOFORM POISONING, CASE OF.

The writer describes a case of this kind in a child 16 months old. The points of especial interest were: The rapidity with which unconsciousness came on, and the corresponding rapidity with which the child returned to consciousness, after a period of over four hours. The pinpoint pupils, which might have led to an incorrect diagnosis of opium poisoning. The bromoform administered to the child was not the last in the bottle, and therefore concentrated, as 6 fluidrachms remained in the ounce bottle after the second dose. H. K. Dillard, Jr. (*Therapeutic Gazette*, April 15, 1903).

BUBONIC PLAGUE, SODIUM CHLORIDE IN.

Last summer a Portuguese military surgeon used sodium chloride in a large number of cases of bubonic plague. Internally he gave daily a solution of 8 grams (2 drachms) in 300 grams (10 ounces) of peppermint-water, in four or five portions; when this produced diarrhoea, he injected 22 cubic centimeters of a 5-per-cent. solution in tepid distilled and filtered water, in two doses. To obviate the diarrhoea he sometimes prescribed the salt with mucilage of acacia, as follows:—

R Sodium chloride, 8 grams (2 drachms).

Sugar, 67 grams ($2\frac{1}{4}$ ounces).

Distilled water, 35 grams ($1\frac{1}{4}$ ounces).

Mucilage of acacia, 20 grams (5 drachms).

Oil of peppermint, 5 drops.

This quantity is well borne by chil-

dren from ten to fifteen years of age; for adults it may be increased, according to the gravity of the case and the strength of the patient.

This treatment is stated rapidly to lower the temperature, the normal being often reached within twenty-four hours, and becoming subnormal three or four days later, and normal again under the continued use of the sodium chloride. The buboes sometimes diminished in size or even disappeared; at others they developed in some patients who had a subnormal temperature or recovered their normal temperature. By means of this treatment the mortality of the disease was reduced by more than 15 per cent. (*Merck's Archives*, April, 1903.)

CANCER NOT CONTAGIOUS.

The writer bases his opinion on the results of an inquiry as to the prevalence of cancer between husbands and wives. He says that, if contagion is possible or probable, nowhere would it be so likely to occur as between husband and wife during coition, assuming the wife to be affected with cancer of the cervix. The conditions are all in favor of ready infection, for cancer of the cervix may exist for some time without the knowledge of the patient, and certainly without dyspareunia (blood may follow coitus, and is sometimes the first index of the disease). The surfaces of contact are relatively large, and in a functional state ready for infection, and both tissues prone to the development of cancer. For these reasons the author thought that, if anywhere, proof of contagiousness would be found here. He accordingly selected a series of clear cases brought under his notice during the last ten years: 180 in all. These were divided into four classes: in the first (where cohabitation occurred for

not less than three months after the cancer of the cervix was discovered) there were 78 cases; in the second (period of six months), 49; in the third (period of nine months), 36; and in the fourth (period of not less than twelve months), 17. In no single case out of the 180 did the husband develop cancer. Further, the author wrote to several well-known gynecologists asking their experience in the matter; in this way he accounted for some thousands of cases and yet was unable to find a single instance of contagion in this respect. The figures which have been published in support of the opposite view—namely: that cancer is contagious—he explains away on the theory of coincidence. Bossi (*Gazzetta degli Ospedali*, April 13, 1902; *British Medical Journal*, April 11, 1903).

CHOREA, AS CAUSED BY STREPTOCOCCI.

Chorea, in the opinion of the writer, is not infrequently an infectious disease; it is, therefore, necessary to make a bacteriological examination of the blood in every case. Not rarely the disease is of streptococcic origin. In polyvalent anti-streptococcic serum we possess a rational remedy for the treatment of appropriate cases of this disease. P. A. Preobrazhensky (*Medicinskoje Obozrenije*, vol. lviii, No. 21, 1902).

COMPRESSED AIR, THE USE OF.

The writer describes an apparatus which has been used in 6000 cases without any ill effects, and concludes that: 1. As to the limitations of the method: the plan of treatment is of no use whatever in the management of the inflammatory and degenerative conditions of the cerebro-spinal axis. The counter-indications are: disseminated sclerosis, spastic spinal paralysis, poliomyelitis, accidents and diseases of the blood-

vessels, neuritis, rheumatism. 2. Its legitimate sphere of action includes cerebro-spinal affections of a functional character in which pain, exhaustion, insomnia, or depression are prominent features. Here the effects are striking and quite beyond those obtained in any other way. 3. Finally, compressed air, by increasing the pressure in the renal blood-vessels, gives rise to diuresis. This effect, obtainable from the air alone, becomes exceedingly pronounced when a diuretic is given, even in insignificant doses. J. L. Corning (*American Medicine*, April 4, 1903).

CORROSIVE SUBLIMATE IN DIFFERENT DILUTIONS AGAINST VARIOUS SPECIES OF BACTERIA, THE REACTION TIME OF.

Different species of pathogenic bacteria, and different cultures of the same species, vary very greatly in their resistance to the action of corrosive sublimate. With some species resistance is diminished in a remarkable degree by a condition of dryness; so that even the 1 to 10,000 solution can bring about sterility in a very short time. But some species are materially affected in this respect by dryness. Corrosive sublimate in as weak a solution as 1 to 5000 is ineffective against the common pathogenic bacteria, including the pus-organisms, when they are moist, excepting after prolonged contact. Since fifteen minutes' contact is not sufficient for the destruction of *bacillus coli communis*, *bacillus pyocyaneus*, and *staphylococcus pyogenes albus* in the moist state, or of *staphylococcus pyogenes aureus* whether moist or dry, the use of this and of weaker preparations in surgical work and for irrigation and similar purposes should be abandoned.

Corrosive sublimate in the 1 to 1000

solution is very slow in its action on some of the commonest of the skin bacteria, and since under the most favorable conditions more than ten minutes' contact may be necessary for it to kill *staphylococcus pyogenes albus*, it should not be relied upon to any great extent to insure sterility of the hands or of instruments. The mere dipping of the hands for a few seconds into solutions of this strength can serve no useful purpose, but, on the contrary, can lead to much harm by inducing a false sense of security. In order to produce sterility of the hands through the use of this preparation, absolute dryness of the bacteria present would be essential; but a condition of the skin which would insure such dryness would also insure the bacteria not on the very surface against contact with the poison. Corrosive sublimate in any of the strengths commonly employed is a much overrated disinfectant, and, under the best of conditions, is so uncertain in its action that it would be of advantage to abandon its use altogether in surgery. Charles Harrington and Harold Walker (*Boston Medical and Surgical Journal*, April 23, 1903).

DROPSY, SURGERY IN.

The writer advocates laparotomy in all cases of extensive ascites of doubtful origin. He describes a number of instructive cases. The abdomen in one measured ninety-four centimeters at the umbilicus, but nothing abnormal was discovered at the laparotomy except adhesions between stomach and liver, possibly the result of an old, healed ulcer. The ascites has not recurred since the adhesions were detached, and the patient has been in good health since. He urges, in particular, early intervention in case of the ascites of cirrhosis, while it is yet

time to accomplish good results. After the liver has become seriously compromised little can be expected from omentopexy as a last resort. The writer quotes, with approval, Harris's article in the *Journal* of May 3, 1902. In many cases supposed to be of a tuberculous or carcinomatous nature, the laparotomy will reveal the welcome surprise of some comparatively insignificant lesion. He affirms that the well-established fact of the benefit derived from a laparotomy in tuberculous peritonitis is by no means confined to the tuberculous form. Every chronic peritonitis, whatever its nature, is susceptible of improvement from it. In one case of diffuse carcinosis with extensive ascites of the abdomen the patient was remarkably improved by a laparotomy and drainage, and survived six months in comparative comfort. The surgeon in such cases should not attempt to disturb the conditions, but merely drain with strict asepsis, and general anaesthesia is not necessary. The writer has collected 78 cases in which Tahna's operation was performed, but, as it was done as a last resort, the proportion of 28 cured and 14 much improved does not represent the actual value of the intervention. He has done it 3 times himself. F. Lejars (*Semaine Médicale*, No. 12; *Journal of the American Medical Association*, April 25, 1903).

DYSENTERY, THE THERAPY OF.

Ipecac is indicated in almost every form and type of acute dysentery owing to its simplicity, its safety, and its certainty, compared with any other method. The advantages are: The promptitude with which the inflammation is stopped; the rapidity with which repair takes place (*a*) by resolution or (*b*) by granulation and cicatrization; conservatism of the constitutional powers; abbrevia-

tion of the period required for convalescence; decrease in the frequency of recurrence; decrease in the frequency of abscess of the liver; diminution of mortality in cases treated. The chief objection to ipecac is its frequent rejection from the stomach. Its administration in the form of compressed pills coated with salol is recommended to avoid this untoward feature. William Roberts (*Journal of the American Medical Association*, April 11, 1903).

DYSENTERY, TROPICAL, TREATMENT OF, WITH SULPHUR.

Three acute and fifteen chronic cases of amœbic dysentery were treated with sulphur of a natural spring in the Philippines. The acute cases were given one bath daily and plenty of the water to drink. In a month two were cured; the third, an alcoholic, had to be returned to medicinal treatment. The chronic cases were given two baths daily and the water to drink, and all were cured in from three to six weeks. The springs contained water at 220° F. and 92° F., with a large percentage of sulphur. T. H. Weisenburg (*Philadelphia Medical Journal*, March 14, 1903).

DYSMENORRHOEA, THYROID EXTRACT IN.

The author reports most favorably on the use of thyroidin in dysmenorrhœa. He regards it as being "a uterine and ovarian anodyne and sedative, as it arrests the different impressions at their formation." He administers 1 grain of thyroidin in capsules thrice daily, for two days before menstruation is due; the quantity is increased to 2 grains thrice daily during the flow. Relief is afforded in over 80 per cent. of cases. The treatment is efficient when the uterus and ovaries are in normal posi-

tion. Any pathological lesion must be remedied by proper surgical measures. Stinson (*American Journal of Obstetrics*, July, 1902).

EPILEPSY.

In his experience at Warsaw with 306 cases of epilepsy he made a special study of the premonitory symptoms of the seizures and the relations between them and to the intensity of the attack. He also studied the relations between the bladder symptoms and biting of the tongue to other symptoms observed. Only 14 per cent. were weakminded. The seizures displayed a regularly ascending type in 61 per cent., an intermittent type in 26 per cent., and a descending type in 13 per cent. In 6 cases he noticed certain post-epileptic symptoms which have previously been regarded as premonitory phenomena. In 1 per cent. the epilepsy was reflex, from adenoid vegetations, and from masturbation in the same proportion. Syphilis was certain in only 1 of the 26 patients over 30, and hereditary in none. Alcoholic parents were noted in 14 per cent., and 8 per cent. of all were addicted to the abuse of alcohol. Aura were noticed in 28 per cent. They usually preceded the milder seizures. M. Biro (*Deutsche Zeit. f. Nervenheilkunde*, xxiii, 1 and 2; *Journal of the Amer. Med. Assoc.*, April 25, 1903).

EPILEPSY AND MIGRAINE. RELATIONS BETWEEN.

The writer emphasizes the frequent coexistence of epilepsy and migraine. Usually, the epilepsy appears later than the migraine. He has found no cases on the borderline, in which one of the conditions might be mistaken for the other. In instances where such a condition might have been possible it was

seen that the migraine was a symptom only of the underlying epilepsy, or the epilepsy appeared as a new element in addition to the migraine. It is not always easy to decide in atypical cases whether epilepsy or migraine is the main pathological condition. A neuropathic predisposition is always present in these cases, and frequently secondary etiological elements are present: syphilis, alcohol, and other intoxications, injuries, arteriosclerosis, excessive physical or mental efforts. Wilhelm Strohmayer (*Münchener medizinische Wochenschrift*, March 10, 1903).

EPILEPSY, THE CORTICAL CELL CHANGES IN; THEIR SIGNIFICANCE AND CLINICAL INTERPRETATION.

The mental changes in epilepsy are analogous, if not commensurate, with the defective motility. However, to establish an adequate coefficient between the occurrence of fits and the degree of dementia is a difficult and complex problem. As to treatment, the writers conclude that they have in this study adequate evidence for the present empirical treatment of the disease in which the individual is given first attention. This consists, largely, to overcome hereditary tendencies and exclude toxic and autotoxic agents, in giving the patient a thoroughly detailed plan of diet, exercise, recreation, baths, and sedatives—comprised in the administration of bromides. In the light of the pathogenesis, the histo-pathological changes, and their sequence, which result in more or less important impairment of normal cerebral functions, the importance of the earliest treatment is obvious; the disease is also too profound in its changes for anything less than the most comprehensive attention.

They deduce from their studies that the missing links of our knowledge of epilepsy consist in the fact that its pathogenic agents and the organic anomaly of the cortex, which constitute its predisposition, still hold the mystery of frequent relapses. By this study, however, the writers claim to have narrowed the gap between the terminal gliosis and the toxic and autotoxic agents in the disease pathogenesis, and they believe this is largely comprised in cell changes and those particularly of the nucleus. L. P. Clark and T. P. Prout (*Boston Medical and Surgical Journal*, April 23, 1903).

ERYTHROCYTE, DEGENERATION OF THE.

The writer concludes that the viscosity of the erythrocytes is influenced by cellular plasma alterations, the nature of which is obscure. The viscosity is exaggerated by the direct influence of various toxic agencies, and is diminished in many anæmic states. This phase of cellular pathology is interesting from an experimental point of view, rather than as a finding of clinical application. Simple decoloration illustrates the earliest retrograde change affecting the erythrocytes, and its intensity generally corresponds to the severity of the anæmic process by which it is excited. The change may exist alone, as in the milder forms of anæmia, or it may be combined with graver necrotic degeneration of the cells, in anæmias of greater severity. Deformities of shape and size are common to all pathological blood, the degree to which such changes develop being related to the intensity of the blood-impoverishment. Megalocytosis is a more serious sign than microcytosis. Atypical staining of the erythrocytes betrays an impairment of function, and.

as a rule, is found most commonly in corpuscles the hæmoglobin content of which is subnormal. It is most striking in anæmias of the primary type. The prevalence of megaloblasts indicates a foetal reversion of the bone-marrow, and stamps the blood-changes as pernicious, except in the anæmias symptomatic of bothriocephalus latus infection and of nitrobenzol poisoning. The presence of megaloblasts indicates a severe anæmia, but not necessarily one of fatal outcome. Granular basophilia, whatever may be its exact origin, should be interpreted as a sign of degeneration. It is a constant blood-finding in but a single condition,—lead poisoning,—but is associated with many diseases involving a variable degree of blood-deterioration. The experimental basophilia excited by the administration of preparations of hæmoglobin warrants a doubt as to the wisdom of using such medicaments as substitutes for iron in the treatment of anæmia. J. C. Da Costa, Jr. (American Medicine, April 11, 1903).

GLYCOSURIA GRAVIDARUM.

Glycosuria gravidarum may arise at any stage of pregnancy. It is not so serious as when diabetes antedates pregnancy. It may disappear in one pregnancy and reappear in another, and end fatally after successive attacks. It frequently arises during parturition, but is of no great importance. Labor is not materially affected, other conditions being equal. Pregnancy is most likely to be interrupted. It is very destructive to the foetus, even more so than syphilis. The maternal mortality is nearly 50 per cent. Diabetics should not marry. Death is usually by coma, no case of eclampsia having ever occurred in a diabetic. William Ruoff (American Medicine, April 25, 1903).

HAY FEVER. NATURE AND SPECIFIC TREATMENT OF.

There can be no doubt that Dunbar has succeeded in extracting from the pollen of certain grasses (maize, wheat, rye, etc.) a toxin which, when instilled into the eyes or nostrils of people predisposed to hay fever, produces in these parts the characteristic subjective and objective symptoms of the disease. The toxin, when injected into the eyes or nostrils of people not predisposed, produces in the great majority of cases no symptoms whatever. But it certainly appears as if there were instances of transition in which, although the persons experimented upon never suffered from typical hay fever, they were yet more susceptible to the influence of the toxin than the ordinary run of people. The effects of the toxin in people suffering from hay fever are as variable in intensity as are the attacks of the affection itself, both with regard to the local and the constitutional symptoms. Dunbar's antitoxin certainly produced immediate disappearance of the subjective, and after a few minutes great amelioration of the objective, symptoms. The mixture, in equal parts, of a toxic solution (1 in 500) and the antitoxic serum suffices to neutralize the specific effects of the toxin. The effects of the antitoxin appear in some instances to be sufficient to prevent a reappearance of the subjective symptoms, while in other instances repeated instillations of the antitoxin were required to produce ultimately the return to normal conditions. But all we know at the present is not sufficient to build the therapeutic hopes on, and this for the reason that we are ignorant of the nature of the special predisposition which exists in hay-fever subjects. Sir F. Semon (British Medical Journal, March 28, 1903).

HEADACHE.

We know almost nothing of the structures in which the pain of headache is felt or the mechanism of its production. This symptom must not be confounded with true neuralgia, in which the pain is paroxysmal in character and directly limited to the course of the nerve and its distribution. The idea that the location of the pain in any particular region of the head is always directly related to some underlying, adjacent, or remote pathological process has not been substantiated by clinical experience. In a large majority of instances the headache is undoubtedly due to toxæmia, resulting from intestinal or gastric disturbances. Ocular defects and neurasthenia are two other very efficient factors. Among other causes which may be mentioned are rheumatism, gout, diabetes, alcoholism, lead, naso-pharyngeal lesions, uterine and ovarian diseases, anæmia, or hyperæmia of the brain. A careful investigation of the entire organism is essential in every case, the most important element in the treatment of patients with headache being the recognition of the cause, as the pain is more often dependent upon some indulging constitutional condition than upon organic intracranial disease. Undoubtedly, the unscientific and general use, by the laity, of coal-tar products and opiates for the relief of headache has resulted largely from the disinterested way in which members of the medical profession frequently treat this unimportant and familiar symptom. W. M. Leszynsky (Medical Record, January 3, 1903).

HEADACHE FROM EYESTRAIN.

The simplest, most effective, and least harmful local measures, according to the writers, are very hot or very cold fomentations. A towel is folded to twelve

inches by four, and dipped into water heated up to 160° or 180° F.; it is then pressed gently against eyes, forehead and temples, repeating every fifteen seconds for five minutes. A soothing collyrium may relieve by its action on the congested conjunctiva, as:—

- R Sod. borat.,
 Ac. borici, of each, 2.0 grams (5ij).
 Aq. camphoræ, 15.0 grams (5ss).
 Suprarenal, 0.7 gram (5ss).
 Aquæ, q. s. ad 60.0 grams (gr. x).

Shake well, allow to stand an hour or two, and use the supernatant liquid to drop into the eye. Another effective eyewater is:—

- R Chlorotone, 0.1 gram (gr. iss).
 Sod. borat., 0.5 gram (gr. viij).
 Aquæ, 30.0 grams (5j).

A local application to forehead and temples is:—

- R Spt. camphoræ, 30.0 grams (5j).
 Spt. lavand., 90.0 grams (5iij).
 Alcohol, 90.0 grams (5iij).

Or the following liniment:—

- R Chloroformi, 30.0 grams (5j).
 Camphoræ, 8.0 grams (5ij).
 Tinct. aconiti, 8.0 grams (5ij).
 Ol. menth. pip., 0.7 gram (mx).
 Alcohol, 60.0 grams (5ij).

Temporary relief may also be obtained from a weak galvanic current in some cases. C. A. Wood and T. A. Woodruff (Medical Standard, March, 1903).

HOT AIR AS A THERAPEUTIC AGENT.

The important points in the use of hot air are: Immediate relief of pain, however severe, which relief may be rendered permanent by repeating the treatment as often as the pain becomes troublesome: every hour, if necessary.

Shortening of the duration of the disease, which usually lasts only from five to ten days when hot air is thoroughly administered in combination with salicylic acid. Lessening of the liability of cardiac involvement because of the rapid control obtained over the pathological condition, whereby the infection is inhibited from further attacks upon other tissues. The lessened number and quantity of the drugs which it is necessary for the patient to ingest because of the increase produced in the efficiency and intensity of their action at the seat of infection, hence rendering it impossible to avoid drug intoxication. In many cases which prove intractable to other measures its employment will render impossible the extinction of the trouble. When properly and judiciously applied, its use is never productive of any vicious after-effect; on the contrary, the patient's general condition is immediately and greatly improved. C. E. Skinner (Boston Medical and Surgical Journal, April 9, 1903).

INFLAMMATIONS OF THE EYE. THE ROLE OF THE TOXINS IN.

The writer presents a series of experiments which demonstrate, he thinks, the importance of the condition as regards integrity of the conjunctival surface in relation to toxins; and also that pathogenic bacteria, even those for which toxins had not previously been satisfactorily demonstrated, do harm through the action of specific soluble poisons.

Bacterial toxins, so far as tested, when instilled even for many hours into the healthy conjunctival sac, were found incapable of producing inflammation or causing other injury. The same toxins, when injected into the tissue of the conjunctiva or into the anterior chamber, invariably set up local inflammation, the

extent and intensity of the inflammation varying to some degree, according to the species of bacterium yielding the toxin. Bacteria which had not previously been proved to produce soluble toxins were found to produce them even in young cultures, and it is suggested that injections of bacterial filtrates into the eye, particularly into the conjunctival tissue, constitute a more delicate biological test for the detection of certain toxins than the tests usually employed for this purpose. The experiments recorded in his paper furnish additional examples, in a comparatively new field, of the importance of toxins in explaining the pathogenic action of bacteria, and likewise emphasize the etiological significance of injuries of the covering membrane of the eye in favoring the action of toxins and of bacteria. R. L. Randolph (Bulletin of Johns Hopkins Hospital, March-April, 1903).

INFLUENZA AS A FATAL COMPLICATION.

Those who still underestimate the malign effect of influenza on the public health would do well to ponder certain statements printed in Chicago's Bulletin of the Health Department for the week ending April 4th. Dr. Reynolds informs us that during "the first four months" of 1903—we presume he means the first three months—influenza was more prevalent in Chicago than at any time since 1891. The number of deaths from all causes in the month of March, 1903, exceeded the number in the same month of 1902 by 350, and there were 330 deaths due, not directly to influenza, but to influenza as a complication of such diseases as pneumonia, consumption, Bright's disease, heart diseases, bronchitis, measles, and whooping-cough, "in about this order of frequency." Of course, it is only the laity who under-

rate the malignity of influenza, and we are glad to see that the Chicago department is pushing its campaign of education in regard to the disease. Editorial (New York Medical Journal, April 18, 1903).

INSOMNIA, TREATMENT OF.

There are many mechanical and physical methods which, with attention to details, will obviate the use of hypnotics or at least enable the patient to sleep with much smaller doses than are usually given. According to Kraepelin, if the patient does not sleep after the intelligent application of these methods, it is improbable for him to sleep with drugs. The necessity of keeping the bed-chamber thoroughly ventilated and at a temperature of about 60° F., is emphasized. The room should be dark, and it is a point of importance that the mental activity of the patient should be reduced for at least one or two hours before going to bed. In cases of neurasthenia in which loss of arterial tone is a marked condition, and in anæmic conditions in which the mean and maximum pressure is low and there is a reversed postural change of pressure, small doses of digitalis will often be sufficient to produce natural and quiet sleep. Hubert Richardson (American Medicine, April 18, 1903).

INTESTINAL DYSPEPSIA.

Intestinal dyspepsia may be due to pathologico-anatomical alterations of the intestinal walls, nerves, lymphatics, or blood-vessels; to absence or deficiency of the intestinal digestive secretions, especially of bile and pancreatic juice; to qualitative or quantitative irregularities of diet; to abnormal bacterial activity; to abnormal gastric chemistry; or it may be of nervous origin—neurast-

thenia intestinalis; or caused by abnormal substances, or irritation reaching the intestines from the blood; or due to the activity of the intestinal parasites, worms; or to hyperperistalsis or excessive mobility of the bowel. E. F. Smith (Medical News, April 18, 1903).

IRON IN THERAPEUTICS.

Nothing in the whole history of therapeutics is more interesting or more instructive than the vicissitudes of the theories on which iron has been administered at various times. For almost as long as the memory of man runneth it has been recognized that the exhibition of iron in certain forms was useful in the treatment of anæmic conditions. Originally this was considered to be due to the fact that iron by its very nature gave strength, and that somehow the substance of the metal was transmuted into vigor for the affected individual. When, long ago, the countryman dissolved shingle nails or some other form of iron in vinegar, or made what the Germans call *Rostwasser* by allowing iron to collect in water, and gave the draught to his anæmic daughters, it was with no idea that the acetate of iron or oxide of iron might in some way affect the chemism of the body, but that the physical qualities of the metal somehow were absorbed and transformed into health-giving, bracing properties for the patient.

When it was discovered that the principal element in the coloring matter of the blood, hæmoglobin, was an iron compound, and that the transference of oxygen from the outer air to the tissues was accomplished mainly by means of the unstable compounds that oxygen forms with this iron-containing substance, then it was concluded at once, and apparently on good grounds, that

the reason why iron was useful in anæmia was that the iron compound administered by the mouth was absorbed directly as food would be from the intestines and helped to make up for the deficiency of iron which exists in anæmic blood. For a considerable time this theory held its ground, and a definite advance in scientific medicine seemed to have been made, beyond which it would be unnecessary to seek for further reasons. The basis of iron therapy, in a word, appeared to be settled for all time.

The advances in physiological chemistry, however, showed that meat and most of the vegetables which men consume contain an abundance of organic iron, certainly much more than would be necessary to supply the place of the comparatively small amount of iron whose absence from the blood is the index of the anæmia and the condition on which apparently the weakness is dependent. Besides, Sir Andrew Clarké had insisted very much that in addition to iron therapy the most important element in the treatment of anæmic conditions was to put an end to the absorption of toxic materials from the intestines by preventing constipation. Evidently the condition of the bowel had something to do with the presence of anæmia, especially in young people, and accordingly the theory of iron therapy was modified, and it was said that the iron ingested was not directly absorbed, but served to prevent the formation of certain toxic compounds, especially substances related to hydrogen sulphide, which occurred in the intestines during periods of constipation. There are those who still consider that this is the main reason why iron acts favorably in anæmic cases.

In the meantime a number of observers in various countries have been find-

ing some very interesting details of therapeutics as regards various metallic substances more or less closely related to one another. It was shown, for instance, by German and French observers that manganese exerted something of the same influence as iron when administered in corresponding doses to anæmic patients, and that this substance made a useful adjunct to iron in such cases. As manganese has normally no place in the tissues at all, this came as a distinct surprise to the holders particularly of the original theory of iron therapy. Other observers showed that almost any of the so-called heavy metals would prove as effectual as iron for the treatment and relief of anæmic conditions. Sir William Broadbent, over a year ago, in his article in the *von Leyden Festschrift*, stated that copper, cobalt, or nickel might be used in small doses to replace iron in the therapy of anæmia with excellent results. Employed in dispensary cases with reasonable care as regards diet and exercise, any of these metals gave the tonic stimulus that was supposed to be the specific effect of iron a few years ago, and some of them even succeeded in cases in which iron had apparently failed. Here in America it has been shown by Taylor, some years before, that mercury in small doses might act well as a tonic, and that if carefully administered it would cause an increase rather than a decrease in the number of red blood-corpuscles and in the hæmoglobin value of their contents. This was a startling addition to our clinical knowledge of the so-called iron therapy. We were really in the presence of a metallotherapy.

It has taken a long while for pathologists to learn anything definite about the pathology of the red blood-corpuscles. The white blood-corpuscle has been de-

scribed as existing in a number of pathological conditions, while the most plentiful red cells have been less fruitful fields for discovery. Recently it has been found that there is a characteristic degeneration of the red blood-corpuscles that takes place as the result of certain toxæmias. This degeneration occurs typically very early in lead and arsenic and other metallic poisoning. Curiously enough, however, a corresponding degeneration has been found to occur in connection with the administration of an excess of iron. This accounts for the unpleasant results that follow the administration of iron in plethoric conditions better than any previous etiological suggestion. It would seem, then, that iron acts as a stimulus to the vitality of the red blood-corpuscles, and that this stimulus may easily be too great and set up degenerative processes.

The whole subject of iron therapy is a lesson in the attitude of mind that a physician should assume with regard to therapeutic questions. While there has been no doubt that clinically iron was beneficial in anæmic conditions, the various theories to account for it have up to date all been without substantiation, and our use of it has depended largely on empirical reasons. Empirical advances in therapeutics, then, the practitioner must be ready to accept, even though the reason for them is not always evident. On the other hand, pretty theories must not be allowed to play too important a rôle in persuading the practitioner as to the possible good that may result from the administration of drugs whose benefit may be due to entirely different reasons from those alleged. In a word, the mental attitude must be one of ready receptivity and yet of thorough-going conservatism. Editorial (*Medical News*, April 25, 1903).

LABOR, RUPTURE OF THE UTERUS DURING.

The writer states that in the treatment of complete ruptures there are six methods to choose from, viz.: 1. Delivery of the child from below, and expectancy, icebag on the abdomen, ergot, opium: *i.e.*, symptomatic treatment. 2. Delivery of the child from below, tamponade of the rent and the uterus; then same as No. 1. 3. Delivery of the child from below, sewing up of the rent as far as possible, and tamponade of the remainder. 4. Vaginal delivery, followed by extirpation of the uterus from below. 5. Laparotomy, removal of the child and placenta, and suture of the uterus. 6. Laparotomy; removal of the child, etc.; partial or complete extirpation of the uterus. The first four methods presuppose the possibility of delivery of the child from below. This is not always possible, or it may be inadvisable because of the possibility of the danger of enlarging the uterine lacerations. In hæmorrhage that cannot be controlled from below, and in contracted pelvis, the laparotomy may become a necessity. If there be any question of sepsis the whole uterus should be removed, the peritoneum closed, and the subperitoneal space drained from below. It is a question if the peritoneal cavity should be drained. Of the four methods of treatment, in which the child is delivered from below, that offer in the best results, is the partial drain and suturing of the peritoneal cavity at the site of the rupture. Even in the septic cases simple drainage offers much hope, but here the vaginal extirpation is coming into vogue, and when the hæmorrhage is slight the latter operation may be practiced. J. B. de Lee (*American Journal of Obstetrics*, March, 1903).

LATENT DISEASES.

In some instances the onset of acute symptoms indicates an exacerbation of the chronic morbid state, and is due to a sudden increase of lesion. More often, however, it is dependent merely on progressive development of the underlying malady, or it may be due to complications. The instances of latent diseases which he gives are numerous, including renal sequelæ in diseases of the bladder and pelvic organs; latent cerebral abscess as a complication of ear disease; pericarditis in renal disorders; walking typhoid; pleural effusion, which is often recognized as latent and generally supposed to be associated with pulmonary tuberculosis; latent phthisis, which may exist to a certain extent; peritonitis, which may be present in its most severe and violent forms without any characteristic symptoms, and especially gastric ulcer and malignant disease of the viscera. Many hepatic disorders run a latent course. This is not uncommon in the tropics. Gallstones produce no symptoms in the great majority of cases, and a patient may suffer from hepatic cirrhosis with no apparent ill effect for a prolonged period. Sometimes the patient appears to suffer from a general peritonitis dependent on perforation, but none such is found, but rather a high degree of atrophic cirrhosis. Brain tumors, nephritis, and aneurism of the large cerebral vessels may also exist for a considerable time, and many diseases of the spinal cord and meninges and even the spinal column may fail to be recognized by the patient or the practitioner. Fracture of the spine as a result of a sudden movement may be the first unequivocal evidence of the existence of sarcoma or other malignant disease of the bone. Kidney diseases, however, furnish the most striking and fre-

quent examples, not only in such disorders as hydronephrosis and pyelonephritis, but also in cystic disease, and especially in granular kidney and certain forms of Bright's disease. Uræmia often, in its most acute form, may be the first intimation of the existence of cystic disease of the kidneys. The great point to be borne in mind is that most of these latent disorders can be detected or, at any rate, suspected by the use of thorough physical examination. It is the symptoms, not the physical signs, that are lacking. J. B. Bradford (*Lancet*, April 4, 1903).

LEUCOCYTOSIS AS A SYMPTOM OF INTERNAL PURULENT ACCUMULATIONS.

Leucocytosis is a phenomenon accompanying each and every suppuration in the body. In peripheral suppurations—as abscess, phlegmon—the leucocytosis is rather slight; but in suppurations in the abdominal cavity—such as appendicitis, perimetritis, paranephritis, etc.—the leucocytosis is quite considerable. The diminution of the pus can always be noted from the diminution of the leucocytosis. The number of the white corpuscles always tends to increase in proportion to the diffusion of the suppurative process, but diminishes as soon as the process begins to regress. The decrease of the leucocytosis is not commensurate with the rise of temperature, but with the diffusion of the suppurative process outside of the primary focus. And some observers noted the fact that in the so-called pseudocrisis of pneumonia there is no abatement of the leucocytosis, although the temperature tends to decline. On the other hand, leucocytosis may indicate retention or increase in the secretion of a wound, the formation of a fresh purulent focus, or of a

metastasis, as well as a complication in the suppurative process, as, for instance, an additional pneumonia or erysipelas. Leucocytosis may also aid in differential diagnosis between suppuration, as in the cæcum, and mechanical occlusions in the lower part of the intestinal canal or between typhlitis and the lesions of typhoid fever, in the latter of which there is an increase in the leucocytosis. As regards the absence of leucocytosis, it may possibly be due to either of two causes: (1) the organism may be so strongly fortified against any invasion as to battle against infection without any intervention on the part of leucocytosis, or (2), on the contrary, it may be, early in the disease, so overwhelmed with the intensity of the disease as to fail to react to leucocytosis. Blossberg (*Wiener klinische Wochenschrift*, No. 47; *Medical News*, April 25, 1903).

LOCOMOTOR ATAXIA, SYMPTOMATOLOGY OF.

The writer has had 7.4 per cent. of cases of tabes in 1200 patients with various nervous affections in his private practice and 2.6 per cent. in 4000 in hospital and dispensary patients. The proportion of men to women was 83 to 6 in the first class and 87 to 17 in the second. The age ranged from 23 to 73. The longest interval after syphilitic infection before the tabes developed was twenty-seven years, and in 10 cases it was only one to five years. In 7 instances both man and wife exhibited tabes. The primary symptom in 67.5 per cent. of 195 cases was lancinating pains, while diplopia was noticed as the first symptom in 3.6 per cent., and gastric symptoms, vertigo, or paræsthesia were the first in 3.1 per cent. each. Weakness of the feet was the first symptom in 2.7 per cent., and bladder symp-

toms, gastric crises, or impaired vision were each the first in 2.2 per cent. In 1.6 per cent. the girdle sensation first attracted attention; in 1.1 per cent. the heart-crises or painful lassitude. In 0.5 per cent. the first symptom noted was dyspnœa, deafness, ptosis, or the Argyll sign.

In the total of 195 cases lancinating pains occurred at some stage of the affection in 93 per cent.; the Romberg in the same proportion, and the ankle-clonus was abolished in 91 per cent. Westphal's sign occurred in 89.4 and the Argyll in 88.8 per cent.; analgesia of the peroneus region in 85.5 per cent.; bladder symptoms in 79 per cent.; paræsthesia in 72; analgesia in ulnar region in 66 and strophy or blanching of the optic nerve in 61 per cent.; anisocoria in 46.6 per cent.; bilateral myosis in 21 and mydriasis in 14 per cent.; crises in 13.7 per cent.; paralysis of ocular muscles in 10.5 per cent., and trophic disturbances in 4.5 per cent. A. von Sarbo (*Deutsche Zeit. f. Nervenhe.*, xxiii, 1 and 2; *Journal of the Amer. Med. Assoc.*, April 25, 1903).

LUNGS, THE ACTION OF STAPHYLOCOCCI ON THE.

The writer has produced pneumonic processes in rabbits' lungs by direct infection with staphylococci, the infection being produced in some experiments by intratracheal injections and in others by compelling the rabbits to inhale a spray containing the organisms. He found that either exposure of the animals to a low temperature or the previous inhalation of mechanical irritants to the lung-tissue favored the pneumonia processes. The pneumonic infiltration was associated with diffuse connective-tissue formation. The lung-tissue exhibited very considerable powers of resistance

against the staphylococci, and the introduction of these organisms was productive of a well-marked phagocytosis. The staphylococci often succeeded in passing out of the alveoli and making their way along the peribronchial and perivascular lymph-spaces into the bronchial lymph-glands. The results of these experiments correspond in most respects with those previously made by the author with streptococci, the main difference being the greater amount of connective-tissue formation with streptococcic infection. Silfvast (Arbeiten aus dem Pathol. Institut. zu Helsingfors, Abtheilung 2, s. 171; British Medical Journal, April 4. 1903).

MALARIA AND YELLOW FEVER AT THE EGYPTIAN MEDICAL CONGRESS.

One of the most valuable and interesting discussions at the Egyptian Medical Congress was that on malaria and yellow fever. Major Ronald Ross, who was unable to be present himself, sent a paper. In the course of his remarks he declared his belief that the most important question now to decide is as to whether the gnats which do not belong to the genus *Anopheles* are or are not concerned in the propagation of malaria, and why certain individuals of one species of gnats are more dangerous than others. For instance, the researches of Stephens and Christophers demonstrate that the *Anopheles Rossii* may be almost exculpated as an agent of malaria. His own personal experience of three years' constant attention to the subject, in countries so different as water-logged Assam and Lagos, on the one hand, and arid Ismailia, on the other, has led him to believe that the best personal prophylaxis is the ordinary mosquito-net during sleep, and to this he adds the prophylactic administration of quinine when

the danger is especially great. As mosquitoes seldom bite in the open air, it seems an unnecessary policy to avoid them there, but he praises very highly the use of the punkah or the electric fan, together with the wholesale removal of breeding-places of all kinds of mosquitoes.

Dr. Montaldo (Spanish navy) read a paper based on his experience of malaria in the island of Fernando Po. He said that he was not at all converted to the mosquito theory, but believed chiefly in general hygiene and in the prophylactic use of valerianate or hydrochlorate of quinine, which he recommended in doses of from 4 to 8 grains, taken fasting before bedtime.

Professor Mariani (Genoa) in a long speech praised the work of the Italians in elucidating the malaria problem, and complained that Professor Koch and others had not given them sufficient acknowledgement. Prof. G. Gaglio recommended very highly the hypodermic injection of quinine, which he gives with urethane in the proportion of 2 of hydrochlorate of quinine to 1 of the latter.

Major Gorgas, of the United States Army Medical Corps, contributed a paper on sanitation and yellow fever in Cuba, a matter which has been fully dealt with in the Medical Record. With regard to the ability to destroy mosquito larvæ on a large scale, Major Gorgas said that in January, 1901, just before the mosquito brigades were organized, an inspection of the whole city showed that mosquito larvæ existed in 26,000 different places in the city. A year later a similar inspection showed less than 300 deposits of larvæ in the same area.

In the same edition of the Lancet as the foregoing report appeared is a description by Major Ross of what he

deems the most effective mode of wiping out malaria. He thinks that measures taken to destroy larvæ and anopheletes is a better plan than dosing everyone indiscriminately with quinine, or than leaving the natives callously to their fate, and especially than by attempting to protect Europeans by mosquito-proof houses. He also proffers the advice that not only the *Anopheles*, but also the *Culex* should be summarily destroyed, as the *Culex pipiens* and the *Stegomyia fasciata* are capable of propagating elephantiasis and yellow fever.

In the discussion at Cairo nothing new with regard to malaria or yellow fever was brought forward, but the old ground was carefully gone over. There can be no doubt that the advice of Major Ross as to exterminating the *Anopheles*, *Culex pipiens*, and *Stegomyia* mosquito is excellent, and, if possible, would quickly do away with malaria, elephantiasis, and yellow fever. How to destroy the *Anopheles* species, however, is a problem hard to solve. At present, at any rate, we must rest content with employing every means in our power to wipe out these disease-bearing gnats in towns and in the neighborhood of towns, which is probably what Major Ross means. At the same time, the judicious use of quinine must not be neglected. It would seem, from the success attained in Cuba, that the day is in sight when yellow fever will be practically extinct, but the scope of yellow fever is limited, indeed, compared with malaria. Editorial (Medical Record, March 28, 1903).

MALARIA, BLOOD-EXAMINATIONS IN.

The writer divides his sixty-six cases into the following three classes: Those in which the diagnosis of malaria was clear from the beginning, those in which

the diagnosis was made only after a blood-examination had been made, and those which were not malarial. A percentage of large mononuclear leucocytes above 12 is diagnostic of malaria. The lymphocytes are usually increased; the total leucocytic-count is diminished; myelocytes are frequently present to an appreciable extent; the erythrocytes are diminished; but the hæmoglobin is not much diminished, the color index often above 1. If, in a malarial case, the fever is very recent, the blood-changes may not have had time to develop. If leucocytosis is present from any cause, the 12 per cent. of large mononuclears may appear not to be present. If the temperature is 103° F. or more when the puncture is made, the above conditions may not be found. D. W. Keiller Moody (British Medical Journal, March 28, 1903).

MALIGNANT ENDOCARDITIS, ANTISTREPTOCOCCIC SERUM IN.

The gravest symptoms, combined with streptococcic infection, even of the blood-stream, are not incompatible with recovery if treated with injections of anti-streptococcic serum. This is true also in malignant endocarditis; but here the chances are probably less favorable on account of the colony of micrococci involved in the vegetations in constant contact with the blood-stream. In malignant endocarditis staphylococci are frequent or a mixed infection of staphylococci and streptococci. If an examination of the blood be negative, it would be prudent, therefore, to use injections of antistaphylococcic, together with anti-streptococcic, serum. Cyril Ogle (Lancet, March 14, 1903).

MENTAL AFFECTIONS, SEDATIVES IN.

The writer has found scopolamin the sovereign sedative, preferable to all

others, for the insane. He has never noted any by-effects from the daily subcutaneous injection of 0.5 to 1 milligram, even when continued for weeks. It has no cumulative action, and he has never encountered a case of idiosyncrasy. Abrupt suspension causes no disturbance. It has no cumulative action, and he has diate soothing of very excited patients. Among the hypnotics he considers paraldehyde supreme. He gives 3 to 5 grams in abundance of water, giving another 3 grams in exceptionally urgent cases. In three to thirty minutes the patient drops into sleep, which lasts for four to eight hours. As much as 15 grams has been given in some cases daily for weeks without harm. H. Pfister (*Journal of the American Medical Assoc.*, April 25, 1903).

METHYLENE-BLUE AND QUININE IN MALARIAL FEVER, A COMPARATIVE STUDY OF THE VALUE OF.

The writers conclude that methylene-blue will destroy malarial parasites in many cases, but is less certain than quinine, and that it is probably most valuable in chronic cases, but has no advantage over quinine. The effects of methylene-blue are ordinarily more unpleasant than quinine. It is useful in cases that cannot take quinine on account of some idiosyncrasy to it. Its use in cases of pregnancy is undetermined. It is probably valuable in treating hæmaturic and hæmoglobinuric fevers on account of its diuretic action; this has yet to be determined. The writers have had no chance to test its use in such cases. They believe that quinine acts more quickly and is much more certain and more reliable than methylene-blue. Moore and Allison (*Medical News*, Dec. 6, 1902).

MILK, CREAM FOR THE HOME-MODIFICATION OF.

Centrifugal cream is probably less desirable for infant-feeding than gravity cream. As obtained from dealers it is often far from accurate in percentage. Siphonage for obtaining gravity cream is an accurate method, but one requiring considerable skill to perform accurately and safely. Dipping off the topmilk is an accurate and safe method if reasonable care is used. The method for obtaining gravity cream by pouring off the top is very accurate and extremely simple. There is no instrument to be bought and kept clean. By this method it is possible to obtain cream of any desired percentage up to 26 per cent. To insure perfect accuracy, frequent examinations with the Babcock machine are required; but for practical purposes this is not necessary, provided the mixed milk from a well-regulated dairy is obtained. C. W. Townsend (*Boston Medical and Surgical Journal*, April 16, 1903).

MILK, THE NEGATIVE SIDE OF THE STERILIZATION OF, IN ARTIFICIAL FEEDING OF INFANTS.

The writer concludes, after a critical study of this subject, that the disadvantages of sterilizing milk in the artificial feeding of infants lie chiefly in those changes effected in milk by high temperatures. These alterations are not only chemical, but also physical, and are so profound and important that they interfere seriously with the absorption and assimilation of the milk. A prolonged feeding with sterilized milk not only destroys the balance of nitrogenous metabolism, but also interferes with the growth of the body, all the more because the salts are changed in character by sterilization, and so an insufficient amount of

the salts necessary for nutrition is absorbed. Sterilized milk, therefore, induces a defective development of the body and renders it more susceptible to the invasion of diseases, especially to maladies of the blood, the general metabolism, and constitutional diseases. These facts, the author believes, should be sufficient to relegate sterilization to the past. N. P. Daniloff (Roussky Vrach, Feb. 15; New York Medical Journal, April 25, 1903).

[*Commentary.*—Besides the reasons given by the author there are others of chemical kind which, in the light of our views, cannot but sustain him. We have submitted the reasons which have led us to conclude that the bactericidal and antitoxic constituents of the blood were trypsin, fibrinogen, and adrenoxin. Again, in our work on the ductless glands, etc. (vol. i, pp. 289, 607, and 729) and in a communication to the Philadelphia Medical Journal of March 14, 1903, we referred to our belief that “the liquid portion of milk varied but little from the blood-plasma, and that the nursing, therefore, received from its mother to protect it against disease (while the adrenal system was undergoing development) the trypsin, adrenoxin, and fibrinogen of its mother’s blood.” This coincides with the results of chemical analysis of milk published by Moro (Jahrbuch für Kinderheilkunde, Oct., 1902). This chemist found, among other constituents, an “oxidative ferment,” a “fibrin-ferment,” and a “trypsin.” Prof. Neumann Wender (Oesterrisches Chemiker Zeitung; Philadelphia Medical Journal, Feb. 7, 1903) also found trypsin and substances endowed with an “oxidizing or deoxidizing action” in milk.

As is well known, breast-fed infants

suffer much less from summer diarrhoea than the artificial fed, even though the milk used be sterilized. If the constituents of milk are those referred to in the foregoing paragraph this is readily accounted for. Indeed, the hæmolytic properties of blood-serum is destroyed when it is exposed to a temperature of 55° or 56° C. (131° to 133° F.). The hæmolytic body of milk being the trypsin,—Metchnikoff’s cytase, the germicidal properties of which he ascribed to “a trypsin,”—it is thus deprived of bactericidal and antitoxic activity even by low-temperature sterilization, *i.e.*, 155° to 170° F. (68° to 77° C.). Pasteurization being sterilization at a temperature of about 167° F. (75° C.), the germicidal properties of milk are as adequately destroyed.

Fischer (“Infant-feeding in its Relation of Health and Disease,” edition of 1901, page 102) refers to this subject in the following words:—

“Just as the medical profession, and to some extent the laity, have become thoroughly impressed with the idea that milk should be boiled before being used, to insure the destruction of the microbes which it contains, Dr. Freudenreich (Bacteriological World, Dec., 1891) comes forward with a series of experiments by which he claims to prove that fresh raw milk possesses remarkable germicidal properties. According to his experiments, the bacillus of cholera, when put into fresh cows’ milk, dies in an hour, the bacillus of typhoid fever succumbs at the end of twenty-four hours, while other germs die at the end of varying periods.

“Milk which has been exposed to a temperature of 131° F. loses its germicidal properties. Milk which is four or five days old is also devoid of microbe-killing power.”

If our views are sound, the difference between blood and milk as regards the distribution of the three bactericidal and antitoxic constituents is as follows: While in blood the trypsin is embodied in the leucocytes, and these cells, as the source of fibrinogen granules, only give off the latter, as needed, to the surrounding plasma, the three agents are present in milk in a free state, as shown by the chemical analysis of Wender and Moro, in the liquid portion. In this manner, as we interpret the process, when the milk reaches the infant's stomach the local temperature raises the proteolytic activity of the trypsin, and this, added to the heat-energy supplied by the reaction between the adrenoxin and the fibrinogen, brings about complete digestion of the more solid constituents. This compensates for the feeble proteolytic and amylolytic action of the salivary and pancreatic secretions during infancy.

Of course, this at once suggests the question: Why does this process of digestion not occur *extra corpore: i.e.*, when the milk is drawn from the cow, and left in receptacles some hours, through the agency of the trypsin and the heat-energy developed by fibrinogen *plus* adrenoxin? That it does is probable, especially when we recall the fact that milk is preserved fresh much longer when kept in a cold place.

If we are not mistaken, the foregoing facts sustain Daniloff when he says that "the disadvantages of sterilizing milk in the artificial feeding of infants lie chiefly in those changes effected in milk by high temperatures." Nearly six years ago, L. Emmett Holt said (*Pediatrics*, Nov., 1897): "The value of milk-sterilization consists in improving its keeping qualities, and in the destruction of pathogenic germs; but with milk that is fresh, and as free from bacteria

as has been shown to be practically possible, sterilization is unnecessary." Time has sustained him.—C. E. de M. S.]

MILK, VARIATIONS IN THE COMPOSITION OF HUMAN.

The average composition of human milk, as shown by 117 analyses, is: Fat, 2.91; sugar, 7.01; proteids, 1.34; ash, 0.13; total solids, 11.39; solids not fat, 8.48. There are wide variations from the average in milk from the same individual at different times. There are marked variations in the average composition of milk from different individuals. The average composition of human milk does not vary to any marked extent at different periods of lactation. During the first lactation the milk, on the average, is weaker in fat and proteids, but stronger in sugar than in subsequent lactations. These differences may or may not be due to age. P. P. Sharpless and E. A. Darling (*Boston Medical and Surgical Journal*, April 16, 1903).

MOUTH INFECTION, NATURAL TEETH AND.

The writer states that there are in the human mouth to-day, as has been the condition through all the centuries, malignant factors of general infection, and causes of disease wholly unperceived and neglected, and thus the oral cavity has ever been and still remains a prolific source of contagion. He contends that medical science, and its allies, ancient and modern, virtually limiting study of the mouth, as an index to general systemic conditions, to the tongue, has failed to apprehend or recognize agencies of infection, obvious, prolific, and virulent, in the very vestibule of human life, and that dentistry has discovered nothing of the serious consequences of mouth infection upon general conditions,

neither made known the most important connections of the teeth in their relations to the general system. The statement that an erupted or exposed tooth-surface, in its natural state, is a bacterially infected surface, he deems incontrovertible, especially when it is considered that, in the normal mouth from eight to twenty years of age and later, there are twenty to thirty square inches of such surface.

The author conceives of the oral cavity as the "vestibule of human life." Being the entrance of the systemic stores, "it is here," he writes, "that the various foods, solids and liquids, incorporate with the oral secretions, secreted into the mouth from special glands, and the mass subjected to a process of maceration in preparation for deglutition. Engaged with these and other indispensable offices, the oral cavity is never wholly out of service, and literally, it may be said, it is never really cleansed. It is here that solid particles from the breath, saliva, food-remains, and other *débris* constantly deposit and accumulate, becoming cemented to the teeth chiefly through inspissation of the viscid mucus perpetually oozing from many irregular glands beneath the mucous surface. Greatly augmenting the infection from this cavity, the air commonly diverted through it, especially in mouth-breathers and in sleep, becomes a purveyor of toxic emanations to the lungs, where it inevitably deposits its contagion in lung-tissue or the blood. Necessarily the subject of such conditions, this vestibular cavity with its twenty to thirty square inches of dentate surface becomes quickly infested and infected with all manner of bacterial formations, decomposing food-particles; stagnant, inspissated, septic matter from saliva, mucus, and sputum; not infrequently with pus-exudation

from irritated and inflamed gum margins; gaseous emanations from decaying teeth and putrescent pulp-tissue; salivary calculi (tartar), nicotine and the chemical toxins which result from decomposition due to mingling of mouth-secretions, excretions, and food-remains in a temperature constantly maintained at the high normal of 98° F." Thus it is manifest that, with past and present conditions of mouth and teeth, infection in the oral cavity is a common heritage, and that none under the existing *régime* can wholly escape its evil consequences. D. D. Smith (Philadelphia Medical Journal, March 28 and April 4, 1903).

NEPHRITIS, PROGNOSIS OF.

It is not known as to what amount of albumin may be considered as a basis for a favorable prognosis in nephritis, for albumin is by far not a reliable symptom. A small amount of albumin may be present in grave renal lesions, and, on the contrary, a large quantity of albumin may not necessarily mean a fatal prognosis (albuminuria in consequence of excessive fatigue). The same may be said about the oedema. It may be met with in parenchymatous nephritis, while being absent in the interstitial form, in which it appears only in consequence of cardiac insufficiency. The cardiac and vascular symptoms are of very great importance in forming an opinion about the prognosis. Even when we notice the rise in arterial tension and signs of cardiac hypertrophy we need not conclude at once that the loss is irreparable, for this condition may last even for years, a rather rare occurrence. But the gravity of the situation becomes sooner or later apparent, and signs of cardiac debility betoken clearly the approaching danger. Alterations in the retina are of bad prognostic omen; out

of 100 cases of albuminuric retinitis, Bull followed up 86, of which 57 died during the first year, 12 during the second, and 17 during a longer period. Phenomena of uræmic intoxication are not always grave. In acute nephritis the patient may recover after delirium and even convulsions. Cephalalgia that resists treatment is a bad indication; if accompanied by vertigo, stupidity, insomnia, it indicates an approaching explosion of grave symptoms. Dyspnoea and asthmatic attacks may last for years, while the Cheyne-Stokes respiration appears usually during the last weeks of life, and occasionally during the last months. Tremescu (*Thèse de Paris*, 1902; *Medical News*, April 25, 1903).

NEURASTHENIA, TREATMENT OF.

The writer insists upon the value of respiratory exercises in the treatment of this and allied nervous conditions, and reports successful cases, not only in neurasthenia, but also in Sydenham's chorea, habit chorea, hysterical tremors, and hysteria. Partial success was obtained in palsies of cerebral origin and in hysterical tremors. Failures were recorded in almost every disease for which the exercises were tried, but organic diseases of the cord and paralysis agitans were treated with appreciable improvement. Overexertion must be carefully guarded against and the regaining of voluntary control is the fundamental principle of respiratory exercises as a remedial agent. The rhythm of the breathing should be frequently changed, and only simple physical exercise combined with the respiratory. The exercise should be limited to the use of pulleys or dumb-bells. J. W. McConnell (*University of Pennsylvania Medical Bulletin*, March, 1903).

PERTUSSIS, FORMALIN IN.

The frightful mortality from whooping-cough this winter in Chicago induced the Health Department to call public attention to the claim of Dr. Cenex, of Bohemia, that the vapor of formalin is a specific and preventive of this disease. After citing a number of cases in which the cough was cut short within twenty-four hours, the conclusion is reached that: 1. By the proper inhalation of the vapors of formalin it is possible to destroy the germs of whooping-cough—those existing on the mucous membrane of the respiratory organs and also those in the surroundings of the patients. By this means the disease is cut short and further infection inhibited. 2. In accordance with these experiences it seems advisable that schools, hospitals, churches, and other localities should from time to time be thoroughly disinfected. It is hardly necessary to add that the treatment should be directed or administered only by a medical practitioner. (*Bulletin of the Health Department of Chicago for Week Ending Feb. 7, 1903.*)

PERTUSSIS, MORTALITY IN.

The writer describes five fatal cases which attended an epidemic at an orphanage in Atlanta, Ga., and reviews fifty-five cases in a period of two years which ended fatally. In the author's cases, the complications, which only existed in some, were not the primary cause of death. The danger-signal, particularly in young infants, was either a developing stupor or an attack of prostration from which they recovered temporarily, to go into a state of increasing stupor and exhaustion until death. In studying the larger series of fatal cases it was found that a catarrhal affection of the mucous membrane is the most prob-

able complication, and liable to prove the most fatal by lowering the resistance of the body to the toxic effects of the infection. Average age of the fatal cases was less than one year, and duration, three weeks. Most of the deaths occurred between April and September. As to the etiology, the author thinks that the characteristic lesion is a bronchial catarrh, caused by the specific micro-organism, the toxin of which acts principally on the nerve-centers. The treatment comprises support of the patient by tonics and stimulants, plenty of fresh air and good food; the establishment of an equilibrium in the nerve-centers, also by tonics, iron and quinine, and by nerve-sedatives; prevention of the further absorption of toxins by destroying the micro-organism producing them—probably best done by antiseptic sprays. M. H. Hull (Philadelphia Medical Journal, Feb. 7, 1903).

PERTUSSIS, TREATMENT OF.

The most satisfactory treatment of pertussis consists in the following: Antisepsis of the buccal and nasal mucous membrane, which is a permanent focus of pathogenic bacteria capable of acquiring under certain conditions a very dangerous degree of virulence; painting the pharynx several times a day with validol containing some oil of bitter almond and 5 per cent. of cocaine hydrochlorate; inhalations of oxygen saturated with validol and cherry-laurel water, several liters, five or six times a day; a daily change of the bedroom, and daily fumigation with sulphur in the patient's absence; internally, belladonna and syrup of Tolu, and euquinine (15 grains *pro die*). D. José Ferrúa (Revista Valenc. de Ciencias Medica, Nos. 42 and 43, 1902).

PNEUMONIA, CALOMEL IN.

The beneficent influence of calomel in pneumonia is emphasized by the author, who, in one case, not only gave the drug with excellent results in the onset of the disease, but apparently brought about a sudden and remarkable improvement when the disease was at its worst and the patient profoundly exhausted from its effects, through repetition of the initial treatment: *i.e.*, calomel, 0.65; scammony, 0.25. Prior to its administration the temperature was 39.5° C.; pulse, 110; respiration, 43. The day following the temperature dropped to 36.6° C.; pulse, 70; and respiration, 38. This seemed to mark the turning point in the disease, abundant perspiration ensuing after the one large stool produced by the remedy, and evidences of the breaking up of consolidation soon being apparent on percussion and auscultation. The author concludes that the influence of calomel in pneumonia is to be attributed to the cutaneous vasoparalysis and subsequent perspiration it induces in common with antipyretics in general, and to its intestinal derivative effect, by means of which a good part of the blood is drawn from the lung and the toxic principles with which the organism is embarrassed carried off in the abundant stools. C. Bertalozzi (Gazz. degli Osped., Jan. 18, 1903; Medical News, April 4, 1903).

PNEUMONIA, POST-OPERATIVE.

In a review of the subject of pneumonia after operations the writer urges the adoption of measures which tend to diminish the frequency of this complication. Schultze, of New York, collected the cases of post-operative pneumonia which occurred during the ten years preceding 1898 at the Presbyterian Hospital. He found that, of 5724 cases

operated upon under anæsthesia, there had been only 27 instances of pneumonia, in 20 of which the operation had been performed upon the tongue or upon the respiratory organs, while in 7 cases the pneumonia could be referred directly to the swallowing of infectious matter. Of these patients, 4914 had been given ether and 689 chloroform, while 116 had been given mixed anæsthesia. Under ether there was pneumonia in 0.35 per cent., with 0.19 per cent. mortality; under chloroform, 1.17 per cent., with 0.12 per cent. mortality; and under mixed anæsthesia 1.71 per cent. mortality and the same frequency of pneumonia. A number of authors had given statistics on the subject, and all the data seem to show that pneumonia may result from the injurious action of ether or chloroform, and yet the question is not so simple as it appears. Thus, Gottstein found 27 cases of pneumonia after 114 operations on the abdomen *under cocaine anæsthesia*. Hypostatic pneumonia very often develops after abdominal section, probably owing to the position of the patient after operation and to the shallow breathing after such operations. A weak heart-action also plays an important rôle in the development of these pneumonias; and, finally, embolism may be the cause of a post-operative inflammation of the lungs. Lesshaft produced artificial strangulation of the intestines in rabbits in which vomiting is impossible, and did not observe any pneumonia in these animals. On the other hand, in dogs, in which vomiting was possible, the same experiment was followed by pneumonia. Exposure to cold during the operation is also a possible cause of these pneumonias.

In order to avoid as much as possible the occurrence of post-operative pneumonias, the lungs of every patient to be

operated upon should be carefully examined, and, if bronchitis is present and the operation cannot be postponed, local anæsthesia should be used. The mouth should be carefully cleaned after vomiting during narcosis. The most rigid asepsis should be observed in all operative work, and exposure to cold should be avoided during and after the operation. After laparotomies patients should be required to breathe deeply, and their chest and abdomen should not be tightly bandaged. C. F. Deruzhinsky (*Chirurgia*, Feb.; *New York Medical Journal*, April 18, 1903).

PREGNANCY, TOXÆMIA OF.

Gastric and intestinal catarrhs following influenza often act as predisposing cause of what appears to be a very resistant form of toxæmia. Plethoric rather than anæmic women are affected, and the main symptoms are headache, ocular pain and soreness, photophobia, frequent micturition, urine less normal, a slight pyrosis, nausea, and œdema. One set of cases is marked by lesions pointing to the kidney disease. The second set presents symptoms of chronic gastro-intestinal catarrh, but with a urine characteristic of toxæmia. Urea excretion should always be the principal guide in diagnosis, and the latter should never be made from the presence or absence of albumin alone. The symptoms may resemble those of hysteria, and attention is called to the fact that hysteria may be caused by toxæmia. Other conditions which must be eliminated are threatened miscarriage and acute indigestion. The writer recommends as treatment measures calculated to increase elimination by bowels, kidneys, liver, and skin. He advises calomel, but in fair-sized doses, 5 to 10 grains, and combines it with sodium phosphate, 1

drachm in four or five powders. High rectal irrigations are of greatest value. W. H. Wells (Philadelphia Medical Journal, Feb. 21, 1903).

PSEUDO-HEART DISEASE.

The writer describes four groups of what he calls "false cardiaes." They are usually adults or youths, all either dyspeptics, smokers, neuropaths, or victims of incipient tuberculosis. Notwithstanding their palpitations, their pains in the heart region, and other symptoms, the heart will be found sound. In the dyspeptics some irritation from the lining of the stomach is transmitted by the sympathetic and induces a reflex excitation of the capillaries of the lung, causing spasmodic contraction. This raises the pressure in the pulmonary artery system; the right heart becomes dilated and tricuspid insufficiency results. Experience has shown that this reflex action occurs exclusively with trivial digestive disturbances, and is never observed in serious conditions. The same syndrome may also result from a small calculus in the biliary passages. This pseudo-heart disease is most frequent in neuro-arthritis. It is sometimes the initial manifestation of incipient tuberculosis. In this case the palpitations may be accompanied by tachycardia, or the latter may occur alone and may precede by six months or a year any appreciable symptoms on the part of the lungs. The heart symptoms may be due to a dyspeptic condition very common in incipient tuberculosis, or to compression by some glandular involvement or to actual tubercular involvement of the heart. There is also a symptomatic bradycardia observed in incipient tuberculosis, but it is very rare. The diagnosis in these tuberculous cases is

difficult, as the subject attributes his symptoms to heart disease. An aid in differentiation is the arterial pressure, which is almost invariably low in uncomplicated incipient tuberculosis, and the phosphaturia, which is also common at this stage. Radioscopy may likewise reveal a lesser transparency of the apex of the lung, as well as the deficient excursion of the diaphragm on the side affected. The potassium iodide test proposed by Striker may also prove useful in the differentiation and serum-diagnosis. The writer also describes the attacks of pseudo-angina pectoris, and the pseudo-heart disease noticed at the time of puberty in girls and at the menopause, as also in certain affections of the uterus and adnexa, in gout, diabetes, etc. E. Barié (Journal of the American Medical Association: from *Semaine Médicale*, vol. xxiii, No. 6, 1903).

PSEUDOLEUKÆMIA, X-RAY TREATMENT OF.

The writer treated two patients with the x-rays with very satisfactory results. A medium vacuum tube was employed, and exposures were made daily for the first ten days, various affected glands being subjected to the rays for one minute only. After thirty-four applications of the x-rays all the enlarged glands had almost entirely disappeared, and the general condition of the patient was much improved; when discharged no glands were palpable. The blood in this patient, however, did not show any characteristic changes. The second patient showed universal enlargement of the lymphatic glands. The blood-examination revealed a well-marked anæmia and a leucocytosis of 208,000, the increase being most marked in the lymphocytes (78.75 per cent.). This patient was

also treated with the x-rays, and after fifteen exposures he developed slight toxæmia, and the treatment, therefore, was discontinued. However, the general condition of the patient was much improved, and all palpable glands were diminished in size, the number of leucocytes being reduced to 76,000. The treatment was again renewed and steady improvement occurred, ending in cure. N. Senn (*New York Medical Journal*, April 18, 1903).

PSORIASIS, THYROID EXTRACT IN.

Very severe case of long-standing psoriasis covering nearly the whole body, the skin of which frequently cracked and bled and caused great pain and suffering. It was so extensive that it nearly resembled a fish-skin, and might have been almost classed as an ichthyosis. The patient was placed on large doses of thyroid extract and the rash cleared away very rapidly. During the treatment the digestive processes were on two or three occasions disturbed, associated with a rise of temperature, but soon righted again by a day or two's intermission of the treatment. The man was over 70 years of age. George Longbotham (*British Medical Journal*, April 11, 1903).

PULMONARY TUBERCULOSIS, WEIGHT IN.

Toxin absorption in the tuberculous area causes reduced assimilation and fever. Loss of weight is, in all probability, due to this. It is not the amount eaten, but the amount assimilated, that is of value to the consumptive. Carefully regulated rest and exercise are of most importance as regards the bodily weight in pulmonary tuberculosis. Forced muscular activity is always injurious. Assimilation is often markedly increased by change of residence or of

climate. Excessive gain in weight may be injurious. The gain in weight is usually first evident on the chest; next upon the abdomen in men and on the hips in women. A quick, constant, and continuous loss of weight indicates as surely as any other phenomenon that a patient is rapidly losing ground. A gain of a few pounds is of little value in prognosis, but, if the gain is constant and continuous over a period of two months, the patient is probably improving. The weight gained affords no sure data for prognosis, but, on the whole, patients who gain over 20 pounds do better than those who gain less. Sunshine and dryness are not necessary factors of gain in weight. Cold weather stimulates assimilation and gain in weight more than warm. Lawrason Brown (*American Medicine*, April 25, 1903).

RABIES.

We think our readers will admit that we are not given to playing the alarmist, and we have no intention of assuming the part with reference to the present prevalence of rabies. It cannot be denied, however, that there is at present unusual occasion for alarm in certain parts of the country. It may be that recent mad-dog stories, with the city of New York as their scene, have been exaggerated by the newspaper reporters, but it can hardly be that they are fabrications; this much is shown by the lamentable death of the little child of a prominent physician of our town from rabies.

At the meeting of the Michigan State Board of Health held on April 10th, the president, the Hon. Frank Wells, made rabies largely the subject of his annual address. He declared that the disease was now epidemic in Michigan. Dr. Victor C. Vaughan, of Ann Arbor, who

reported as a special committee on rabies, intimated that it had gradually spread from New York, where it had been very prevalent two or three years before, through Ohio and into Michigan. It had been diffused through every part of the lower peninsula of Michigan, and was now prevailing among cattle, hogs, and other domestic animals. Many dogs and children have been bitten, and a man had died in Ypsilanti and a child in Saginaw. On Dr. Vaughan's recommendation a Pasteur institute had been established in connection with the State university, and six patients had already been treated, five of whom had been bitten by dogs known to be infected with rabies. Several thousand dollars' worth of cattle had been lost from the disease in the State, and the moderate appropriation of \$2500 which the university had made for maintaining the institute for a year had been well invested. The president remarked in his address that circulars of information and forms of regulations requiring the muzzling of all dogs "at large" had been sent to each of the sixteen hundred local boards of health in the State.

In view of all these facts, we submit that there is good ground for enforcing the muzzling of all dogs in the affected districts, and we may add that we have a strong leaning toward the extermination of all city dogs. Editorial (New York Medical Journal, April 18, 1903).

ROENTGEN RAYS: THEIR MECHANICS, PHYSICS, PSYCHOLOGY, AND PATHOLOGY.

The x-rays cause slow degeneration. The connective tissue, musculature, and the bones are not at all or are only slightly affected, and only suffer secondarily to inflammatory action. The first change is a degeneration of the

epithelium. There were also localized masses of the cells of the glandular organs, of blood-vessels, of muscles, and of connective tissues which show degeneration. This degeneration is both of the cell-body and nucleus. As soon as the inflammatory reaction has reached a sufficient degree, there is increased vessel dilatation with serous effusion, infiltration of cells, and immigration of leucocytes until the structure is lost in a mass of infiltration. E. V. Delphey (Medical News, April 18, 1903).

SCARLATINA, BACTERIOLOGICAL STUDIES OF THE SKIN AND THROAT IN.

The bacteria obtained from cultures from the skin, epidermal scales, and the surface of the tonsil in cases of scarlatina are the same as those found in the same locations in health, and not one of them is constantly present except the streptococcus in the throat. Because the numerous cocci which grow in such cultures, and which appear in groups of two and four or bunches of the same under the microscope, it is impossible to identify them, except by a complete study in pure culture. Cultures made by inexperienced persons, or by those who do not appreciate the importance of avoiding the tongue, are especially apt to contain large diplococci or sarcinæ. The streptococcus is present upon the tonsil of scarlatinal patients in enormous numbers in almost all cases. G. H. Weaver (American Medicine, April 18, 1903).

SCARLATINA, PILOCARPINE IN.

According to the researches of the Pasteur Institute, the saliva possesses the greatest toxilytic power of all the secretions, and is poured out in the locality where the scarlatina toxins are formed. Hence, pilocarpine is the most valuable single agent against scarlatina and its

associated affections. It should not be given in immediate conjunction with the coal-tar antipyretics, and each dose is better preceded by bathing. Chloral is nearly always indicated in small, frequently repeated doses. In case of disagreeable effects from pilocarpine, a hypodermic of atropine, the "physiological antidote," will protect the patient. Toleration is rapidly established. A great gain is in the prevention of parched mouth and lips. E. W. Saunders (*Archives of Pediatrics*, Feb., 1903).

SEASICKNESS.

The writer ascribes this disorder to the following factors: The motion of the ship causes constriction of the arteries of the brain and consequent anæmia of this organ. This gives rise, as at other times, to rapidly occurring nausea and vomiting. The retching and vomiting then increase the blood in the brain, and soon relieve the cerebral anæmia, removing the sense of nausea. The stomach only plays a passive rôle, and is caused to act by the central nervous system whether empty or full. Everything that helps to facilitate the flow of blood to the brain and increase the same mitigates or removes seasickness. Binz (*Centralblatt für innere Medizin*, Feb. 28, 1903).

SINUSES, SUPPURATION OF THE FRONTAL, ETHMOID, AND SPHENOID.

After reviewing the anatomy of the sinuses the writer discusses the affections of these cavities as follows:—

Etiology.—(a) Anything that impairs the general health and lowers vitality; (b) infection by any of a numberless host of micro-organisms.

Pathology.—The pathological conditions are those that can be found in the

mucous membranes of any other part of the body. If the inflammatory process should last for a sufficient length of time, then the underlying bone will become involved and necrosis will follow. The discharged pus may infect the nasopharynx, and the Eustachian tube and middle ear may become secondarily infected.

Symptomatology.—The symptoms vary greatly in character and severity. A suppurative process may be present in one or more of the nasal sinuses without giving rise to symptoms of sufficient severity to arouse the patient's attention. Excessive secretion of various character is not infrequent. Pain is a very irregular symptom. It is usually worse in the morning. Its localization depends, to a considerable extent, on the sinus affected: In frontal-sinus disease there is a sense of pressure at the base of the nose and over the eyes, and occasionally there is pain about the temples. In ethmoidal disease there is pain and pressure about the eyes, the pressure often being complained of as deep in the head. Occasionally pain is complained of in the temples, forehead, or occiput. In sphenoidal disease the pain is deep and boring, and there is also nearly always pain in the occiput. In addition to what may be called the strictly local symptoms there are usually a number of secondary ones. Mental depression is often very marked. The eyes are often complained of, and many eye-symptoms, such as strabismus and ptosis, may be present.

Diagnosis.—It is often easier to suspect suppuration of one of the accessory sinuses than it is to prove it. The best aids to diagnosis are: 1. Transillumination. A valuable, though at times, misleading, aid. 2. Inspection. This should be done first without clearing the nose,

and then with a clean nose and under cocaine. If pus is found one must endeavor to ascertain its origin, and even when this is not possible its location will, as a rule, point to one or other of the sinuses as the seat of trouble. If there are distressing symptoms, together with a purulent discharge of unknown origin, it is justifiable to remove the whole of the middle turbinate in order to obtain a better view. 3. The probe and cannula. With either of these instruments valuable data can often be obtained.

Treatment.—The fundamental principle of treatment is free drainage. All abnormal growths must be removed, and, if necessary, the middle turbinate should also be removed. Following this, either the normal openings leading to the various sinuses must be enlarged or new openings must be made. E. M. Holmes (Boston Medical and Surgical Journal, March 19, 1903).

SMALL-POX, TREATMENT OF, BY THE SERUM OF IMMUNIZED HEIFERS.

In 1897 the writers reported observations on the treatment of small-pox by the subcutaneous injection of serum obtained from heifers immune to vaccination, the results of which were most unsatisfactory. They now give an account of thirteen cases in which large doses of serum were administered. Analysis of these cases had led to the following conclusions: 1. No action of any kind was observed in the hæmorrhagic cases treated with serum. In Cases 1 and 2, as the serum was administered only twenty-four hours before death, there was probably too little time for it to exercise any influence; but in the third patient, who died a week after the injection, there was probably sufficient time for the influence of an immunizing agent to become apparent, had

the serum contained such substance in sufficient amount. 2. In certain cases in which the serum was administered from eight to eighteen days before death or commencing desiccation, no influence whatever seemed to be exercised upon the course of the disease, though in these cases there was ample time for the serum to act. 3. In the remaining six cases the serum was administered from four to seven days before desiccation commenced. In all of these the course was modified, and there was probably sufficient time for the serum to exercise an immunizing influence; but as all, with two exceptions, were undoubtedly vaccinated, it is improbable to determine whether the modified course resulted from the primary vaccination or from the treatment. 4. Case 13 shows that the serum completely failed to modify the course of a revaccination. 5. It is possible that the eruption which appeared on the eighth day after the serum was administered may have been due to the presence in the serum of some agent identical with, or closely resembling, substances present in the blood of variolous patients. 6. That the serum in Case 13 did exercise some influence upon the tissues, though none so far could be determined on the vaccination, is suggested by the development of the cutaneous erythema on the eighth day after the administration of serum was begun. R. S. Thomson and John Brownlee (Lancet, April 4, 1903).

TETANUS, TREATMENT OF, BY SPINAL SUBARACHNOID INJECTIONS OF ANTITETANIC SERUM.

In two cases treated by the writer no attempt was made to maintain an equation between the amount of spinal fluid withdrawn and the amount of serum injected; the shock or collapse so often observed following spinal subarachnoid

injection of cocaine is solely due to the physiological action of the cocaine. The anatomical seat of the wound plays an important rôle in the production of the constitutional symptoms of tetanus; a favorable point for an injection of tetanus to produce constitutional effects is the space in the palm of the hand between the first and second metacarpal bones. The reaction after each injection was so prompt and improvement so positive that the author believes in the spinal subarachnoid injection of the tetanus antitoxin, preceded by the withdrawal of the active, concentrated, highly toxic spinal fluid, supplemented by forced nutrition and proper care of the wound. W. H. Lockett (Medical News, April 18, 1903).

TIC DOULOUREUX, SUBDURAL INTERPOSITION OF RUBBER TISSUE IN OPERATIONS FOR.

Operations upon the Gasserian ganglion for tic douloureux have been carried to an unnecessary degree of severity. Resection of one-fourth or one-half of an inch of the nerves anterior to the ganglion and within the cranium, with the interposition of rubber tissue, can be relied upon for perfect cure, up to six years at least, with probability of permanency as great as by any other method. This is a simple, speedy, and safe method, and thereby fulfills the highest aims of the best surgery.

The author advocates that in grave cases of tic douloureux the surgeon, instead of temporizing by any of the external methods of operating, should at once resort to the following method: The external carotid artery may be ligatured with advantage, as a plan of controlling hæmorrhage. A vertical incision over the middle of the zygoma, carried through the temporal muscle

down to bone, divides no important nerves or vessels. The muscle is scraped to either side, and held by retractors. A small opening in the skull is then made by gouge and mallet, which may be enlarged rapidly and safely to form an orifice of an inch and a half diameter. The dura is then passed away from the middle fossa until the nerves are exposed. The hæmorrhage, so much complained of, from the venous sinuses on dissecting up the periosteum, can be effectually and quickly controlled by pressing a strip of rubber tissue upon the seat of bleeding with a firm pad of gauze. The clotting of blood under the rubber tissue takes place very quickly. The nerve-trunks are grasped in separate artery clamps, and are divided each close to the foramen of, and also separated either by section or forcible rotation from, the Gasserian ganglion. The wound having been packed for a few moments with narrow strips of iodoform gauze, a piece one inch and a half long and three-fourths of an inch wide, of thin gutta-percha tissue, stiff enough to be easily handled, and sterilized by rubbing with bichloride solution and subsequent immersion in salt solution, laid carefully over the foramen ovale and the foramen rotundum, where the nerves have been separated, and pressed gently, but firmly, into place by iodoform gauze. In a very few moments the gauze may be drawn away and the ganglion allowed to settle down upon the rubber tissue. A small drainage-tube should be placed in the lower angle of the wound for a few hours to insure a perfectly dry healing. The author asserts that it is certainly past dispute that there is no need for the removal of the first branch of the fifth pair in any case of grave tic douloureux unless the origin of the affection is to be found in a tumor of the Gas-

serian ganglion or behind this structure. The object of interposing rubber tissue is to place a permanent barrier to the reunion of the divided nerves. Abbe (*Annals of Surgery*, Jan., 1903).

TOBACCO-DEAFNESS.

Cases of deafness due to tobacco-smoking may be classified into three groups: Mechanical, or pneumatic; irritative, or catarrhal; toxic, or nerve-deafness. In the group of nerve-deafness the author brings forth seventeen cases, and in regard to them he emphasizes the following points: They were all marked cases of nerve-deafness (unattributable to other causes) occurring in heavy smokers. The loss of low tones in 50 per cent. suggests an auditory equivalent for a recognized ocular lesion. There was definite scotoma in four cases and impaired sensation of vision in eight of them. The disease was symmetrical. Eighty per cent. showed marked improvement on abstinence from tobacco, and, with supplementary drug treatment, three were cured. Wyatt Wingrave (*Medical Press and Circular*, Feb. 11, 1903).

TUBERCULOSIS, ENLARGED AXILLARY GLANDS IN INCIPIENT.

While not so common as enlargement of the tracheo-bronchial glands, which is almost constant, enlargement of the axillary glands is found in about one-third of the cases of tubercle of the apex, and may be considered as presenting considerable diagnostic significance. When the enlargement is not great, the glands, which vary in size from a lentil or pea to a haricot-bean or a hazelnut, can be felt when they are sought for. They roll about under the finger, and are painless; the patients are generally unconscious

of their existence. At the same time some glands are found on the side of the neck above the clavicle. The author has never seen these glands soften or subside, at least in the first stage of the lung disease; but he thinks it likely that they diminish in size when softening or ulceration occurs in the pulmonary lesion. The writer believes that in cases in which there is a general failure of health without definite functional disturbance or progressive emaciation without apparent cause, and in which there are no certain physical signs, the existence of a unilateral axillary adenopathy, should confirm the suspicion of incipient pulmonary tuberculosis. C. Fernet (*Bulletin de l'Académie de Médecine de Paris*, March 10, 1903).

TUBERCULOSIS, PROGNOSIS IN.

In 169 cases with tubercle bacilli examined at the Adirondack Sanitarium, 42 per cent. had lost their bacilli on discharge; of the incipient cases, 75 per cent. were apparently cured; and of the advanced, only 19 per cent. This shows the better prognosis for the early cases. Other observations also prove that one specimen proves little or nothing in regard to prognosis. If the number of bacilli steadily decrease in a series of examinations at intervals sufficiently long, the patient may be improving; but the constitutional symptoms and local signs give much more accurate information. If on repeated examinations large quantities of tubercle bacilli are found, the disease had probably advanced to cavitation. Repeated observations seem to show that the morphology of the tubercle bacilli affords little or no ground for prognosis, but the short bacilli are suggestive of a more active process. Clumps are more apt to be found in the severe cases, but may occur in all. L.

Brown (Journal of the American Medical Association, Feb. 21, 1903).

TUBERCULOSIS, SILVER NITRATE INJECTIONS IN.

The value of this method in the treatment of pulmonary tuberculosis is emphasized by the writer. Fifty-five cases are recorded, treated by twenty-one observers. The injections were given in the neck over the affected lung. The collective results seem to show that the injections possess a decided antagonism to the complex pathological processes known as pulmonary consumption. Cough was improved in 44 cases and ceased entirely in 6, the effect being probably due to a certain degree of stimulation produced by the injection in the neck on the vagus and its ramifications, promoting the tone and resistance of this nerve. Vomiting, when present, is relieved or abated. Night-sweats were present in 42 cases; they were improved in 27, and ceased altogether in 14. The general strength is usually improved and the gain in weight is often rapid, all classes of cases, whether incipient or advanced, participating in the increase. T. J. Mays (Philadelphia Medical Journal, March 14, 1903).

TUBES AND OVARIES, CONSERVATIVE SURGERY OF THE.

The consensus of opinion from the indications given by the operators of the widest experience is that conservative operations on the tube and ovaries may be practiced: (1) for new growths of benign character, for myoma and fibroma of the tube, simple cysts, dermoids and fibroids of the ovary, and parovarian cysts; (2) the tube and ovary ought not to be sacrificed as a matter of convenience to the operator. It is contra-indicated in malignant or in papillary

disease; (3) for chronic oöphoritis and cystic degeneration; (4) for hæmatoma of the ovary and tube (perhaps hardly a consensus of opinion here); (5) for inflammatory diseases of the appendages, where the acute stage has subsided, provided that there is no suppuration in the pelvis or in the ovary, that the contents of the tube are serous or hæmorrhagic, and prove sterile on immediate coverslip bacteriological examination (Schauta, Wertheim), and that the inner end of the tube is patent. For conservation to be rational it is essential that part of the ovary should be capable of function; if both ovaries have to be entirely removed, there is no reason for retaining the tube; the state of the ovaries must govern the method of procedure; (6) conservative operations on the tubes should be limited to the child-bearing period. Up to the present it is uncertain whether an ovary, the seat of a small cystoma, may be safely resected or whether a tube, dilated by old sterile pus, can be safely opened up. Some of the American surgeons show special boldness in the presence of pus. With regard to the tubes, the majority of conservative operations are undertaken when the abdomen has been opened for gross disease of the appendages upon one side; and less advanced tubal disease has been revealed. In considering the method to be adopted in dealing with the tubes, certain points stand out: the artificial ostium should be wide enough to allow of later contraction, if necessary, by slitting the tube longitudinally. Provision should be made for eversion of the mucosa in order to obtain as far as possible the conditions present in the normal ostium abdominale. Care should be taken, by suture or otherwise, to leave the new opening in the tube in juxtaposition with the ovary. The energetic

disinfection of the tubes by antiseptics practiced earlier is unnecessary if the cases are suitably chosen, and all measures likely to irritate the peritoneum are to be avoided. It is still undecided whether resection or ignipuncture of the ovary is the best operation for chronic oöphoritis and cystic disease. That resection may be followed by adhesion in some cases has been proved by observation. We are not yet in a position to determine how far the technique adopted (*i.e.*, the kind of suture used and the method of suture) is responsible for such adhesions. Florence N. Boyd (*British Journal of Obstetrics*, March, 1903).

TYPHOID FEVER, EHRLICH'S DIAZO-REACTION.

The examination of the urine in cases of suspected typhoid is of value provided its limitations are recognized; the reaction is more constantly present in typhoid than the Widal reaction; in the majority of instances the diazo-reaction is present forty-eight hours earlier than the Widal reaction; it disappears early, and, therefore, results obtained later than the second week are of little value; doubtful reactions have slight significance. J. S. Billings, Jr. (*New York Medical Journal*, April 18, 1903).

TYPHOID-FEVER VACCINATION.

The following propositions must be accepted as axiomatic: The vaccine material must be taken from a culture of the bacillus typhosus; the vaccine should consist of a sterilized culture or of a constituent isolated from such a culture; the vaccine material must be free from contaminating organisms. The essential immunizing element in a vaccine is a constituent of the bacterial protoplasm, and the amount of this protoplasmic constituent will determine the potency of

the vaccine. There is nothing novel in the vaccine prepared by Macfadyen except that it was prepared with liquid air. A. E. Wright (*British Medical Journal*, April 4, 1903).

URETERO-URETERAL ANASTOMOSIS.

Unintentional division of the ureter in operations in the abdominal and pelvic cavities is apt to occur in cases in which numerous adhesions exist. Several methods of dealing with the condition are available: The kidney on the injured side may be removed; the ureter may be passed into the intestine (colon or rectum), into the vagina, or through the abdominal wall; the kidney may be brought down, and the extremity of the ureter sutured into the wall of the bladder; an anastomosis may be made between the extremities of the divided ureter. This classification, while not exhaustive, covers the most important procedures devised. Of these methods, the last two are the most worthy of consideration. Uretero-ureteral anastomosis would seem to be the operation of choice. Uretero-ureteral anastomosis, or uretero-ureterostomy, as the operation is designated by Kelly, may be performed in various ways. Henry Morris gives the following classifications: End-to-end anastomosis by suturing the ends together in a transverse line; end-to-end anastomosis; lateral implantation; end-to-end anastomosis by suturing the ends together in an oblique line. The transverse end-to-end method was used by Schopf (1886) in the first recorded cases of uretero-ureteral anastomosis. The objections to the operation were so serious that the operation has been almost discarded to-day. Poggi originated the end-to-end anastomosis. Lateral implantation was devised and described by Van Hook in 1893. Kelly was the first

to apply this method to the human subject. The oblique end-to-end anastomosis was first used by Bovée. The author reports two successful cases in which the Van Hook method was resorted to. G. B. Johnson (*American Gynecology*, Jan. 19, 1903).

UTERINE AND GASTRIC DISEASES. THE RELATION BETWEEN.

Uterine and gastric troubles may be in close reciprocal relation; in making a diagnosis of reciprocal action merely coincident affections of these organs must be excluded; the first medium of reciprocal action is the nerve-path, the center of which for the genital must be sought, not in the brain or spinal cord, but in the sympathetic system. The central center of this is the solar ganglion, by means of which the uterus, through the inferior hypogastric plexus, is brought into reflex association with the anterior and posterior gastric plexuses. The reflex paths are called spermatic, pseudo-hæmorrhoidal, cutaneo-cavernous, utero-ceeliac, and utero-spinal anastomoses. The most direct reflex paths are direct connections of the vagus with the sympathetic system, without entering the solar plexuses, especially with the utero-vaginal plexuses and with the para-uterine ganglia, which are connected with this (genito-crural anastomosis). The other mode of origin of reciprocal action must be sought in changes in the common statical relations of both organs. Dislocations of the stomach cause uterine displacement through reciprocal action of the statical mechanical forces (secondary uterine trouble), whereas primary displacements of the uterus produce secondary genitoneurosis or actual disease, the reciprocal action of these

cases being brought about through nerve-reflexes. The blood-paths play a rôle of only tertiary rank in regard to this reciprocal action. Tuszkaï Odön (*American Journal of Obstetrics*, March, 1903).

VARICOCELE, NEW OPERATION FOR.

The writer uses the electrothermic angiotribe, instead of ligatures, in the open operation for varicocele. Downes's instrument offers the following advantages over the simple angiotribe suggested by Freeman: A more scientific, less crude, and less dangerous method than that depending on violent traumatism in order to produce hæmostasis is substituted; there is less danger of secondary hæmorrhage and from thrombus; the operation is not followed by pain; the instrument is not conducive to the production of orchitis, a condition commonly attending operations in the vicinity of the cord. O. Horwitz (*Philadelphia Medical Journal*, March 28, 1903).

YELLOW FEVER IN THE TROPICS.

Since the discovery of the mosquito transmission of yellow fever the morbidity and mortality of yellow fever have practically disappeared in Havana. The writer gives a table which illustrates the number of deaths per year from 1900 to 1902. The average number of deaths per year up to 1901 was 446. After the introduction of measures aimed at the destruction of mosquitoes and the prevention of these insects from biting those sick and those suspected of having yellow fever, the prevalence and mortality fell; from 1901 to 1902 the number of deaths was five, and in 1902 there were no deaths. W. C. Gorgas (*Lancet*, March 28, 1903).

INCREASE IN THE MEDICAL CORPS OF THE NAVY.

THE Fifty-seventh Congress in its last session provided for an increase of 150 numbers in the medical corps of the navy, 25 of which are to be appointed each calendar year for six years. By the enactment of this law there is afforded to the young physicians of the country an opportunity to take service in the navy of the United States and an assurance of the continuance of this opportunity for the next six years. The number of vacancies in this corps occurring from retirements, resignations, and casualties average about 10 a year, which, added to the 25 created by new legislation, makes 35 appointments open to ambitious young medical men yearly.

The future prospects of the medical officer of the navy, both for promotion and professional opportunity, are very bright, and the plan of enlargement of the naval establishment already adopted and authorized, as well as that in contemplation, gives assurance that this outlook will grow even more promising.

The medical corps of the navy consists to-day of the following numbers and grades: One surgeon-general with the rank of admiral (equivalent to brigadier-general in the army); 15 medical directors with the rank of captain (equivalent to colonel in the army); 15 medical inspectors with the rank of commander (equivalent to lieutenant-colonel in the army); 85 surgeons with the rank of lieutenant-commander (equivalent to major in the army); 23 passed assistant surgeons with the rank of lieutenant (equivalent to captain in the army); 56 assistant surgeons with the rank of lieutenant, junior grade (equivalent to first lieutenant in the army), with 152 vacancies. There are 27 vacancies in the grade of assistant surgeon for the year 1903.

Assistant surgeons, after three years' service as such, will be eligible for promotion to the next higher grade—that of passed assistant surgeon—a grade which insures promotion to the middle grade—that of surgeon—after a short period of service. To illustrate, the junior officer of the grade of surgeon to-day has reached this grade after less than five years' service and is in receipt of a salary of \$3000 per annum. While this is somewhat exceptional, the prospects of promotion to this grade for the assistant surgeons now entering the service are very nearly as good.

The professional opportunities afforded the officers of the medical corps are very good at present, and are constantly improving. The first assignment to duty of a newly appointed assistant surgeon is usually to some one of the fourteen naval hospitals, where he remains until the opening of the course at the Naval Medical School in Washington, early in October.

Books and Monographs Received.

The editor begs to acknowledge, with thanks, the receipt of the following books and monographs:—

Transactions of the Eighth Annual Meeting of the American Laryngological, Rhinological, and Otolological Society. Held in Washington, D. C., June 2, 3, and 4, 1902.—The Prevention of Disease. Translated from the German, with an Introduction by H. Timbrell, M.A., M.D., D.P.H. Funk & Wagnalls Company, New York, 1903.—Transactions of the Luzerne County Medical Society for the Year Ending December 21, 1902. Volume X.—A Case of Metastatic Adrenal Tumors in the Left Midfrontal and Ascending Frontal Convulsions. By Walter Channing and Wallace M. Knowlton, Brookline, Mass. 1903.—The Mental Status of Czolgosz, the Assassin of President McKinley. By Walter Channing, Brookline, Mass. 1902.—The Theory of Cross Education as Applied to the Auditory Apparatus. Some Experimental Studies. By Lewis S. Somers, Philadelphia. 1902.—On the Pathology of Acute Rheumatoid Arthritis. By W. Hale White, London, 1903.—On

the Subsequent History of Three Cases of Colitis on whom Right Lumbar Colotomy was Performed Several Years Ago. By W. Hale White and C. H. Golding-Bird, London. 1902.—A Case of Malignant Endocarditis giving Vidal's Reaction. By W. Hale White and W. C. C. Pakes, London. 1902.—Congenital Pulmonary Stenosis. By Joseph Burke, Buffalo, N. Y. 1902.—Fibropapilloma of the Larynx with Unusual Movements. By Hanau W. Loeb, St. Louis, Mo. 1902.—Carcinoma of the Epipharynx. By H. W. Loeb, St. Louis, Mo. 1902.—Contribution to the Study of Antrectomy. Considered as an Operative Means and a Preliminary Step to Operations Necessitated by the Complications of Mastoid Suppurations. By Oliver Lenoir. Translated by H. W. Loeb, St. Louis, Mo. 1902.—Chronic Sphenoid Abscess. By Lewis S. Somers, Philadelphia. 1903.—Case of Bubonic Plague, with Exhibition of the Bacillus. By Judson Daland, Philadelphia. 1903.—Ménière's Disease, with Report of a Case. By James M. Brown and Judson Daland, Philadelphia. 1898.—The Treatment of Malaria. By Judson Daland, Philadelphia.—Blindness from Congenital Malformation of the Skull. By Charles A. Oliver, Philadelphia. 1902.—A Review of Seven Hundred and Twenty Laparotomies for Gallstones, with Special Consideration of Ninety Cases of Drainage of the Hepatic Duct. By Prof. Hans Kehr. Translated by Max J. Stern, Philadelphia. 1902.—Salient Points in the Treatment of Catarrhal Deafness. By Sargent F. Snow, Syracuse, N. Y. 1903.—Conservatism in the Treatment of Acute Mastoiditis. By Sargent F. Snow, Syracuse, N. Y. 1903.—The Chemic Pathology of the Saliva and Pharyngeal Secretions (Sialo-semeiology) as a Means of Diagnosis. By D. Braden Kyle, Philadelphia. 1902.—The Use of Suprarenal Gland in Diseases of the Nose and Throat. By D. Braden Kyle, Philadelphia. 1902.—Systemic Infection Due to Natural Teeth Conditions. By D. D. Smith, Philadelphia. 1903.—Observations upon Leprosy Occurring in Japan, Iceland, and Norway. By Judson Daland, Philadelphia. 1903.—Constitutional Manifestations due to Infectious Processes of the Adenoid Structure in Children. By D. Braden Kyle, Philadelphia. 1902.—Etiology and Pathology of Catarrhal Conditions of the Naso-pharynx. By D. Braden Kyle, Philadelphia. 1903.—The Excision of Cancer of the Rectum. By Lewis H. Adler, Jr., Philadelphia. 1902.—Polypoid Growths in Children *versus* Prolapse. By Lewis H. Adler, Jr., Philadelphia. 1903.—Gastro-jejunostomy with the McGraw Elastic Ligature, for the Relief of Gastroptosis. By H. O. Walker, Detroit, Mich. 1903.—Hyoscine in the Treatment of Morphinism; its Office and Value. By George E. Pettey, Memphis, Tenn. 1903.—Pelvic Deformity in New York City. By James Clifton Edgar, New York. 1902.—The Operative Treatment of Fractures of the Femur. By G. G. Davis, Philadelphia. 1900.—The Value of Teaching the Fundamental Principles of Medicine from the Standpoint of their Practical Application. By G. G. Davis, Philadelphia. 1902.—Some Problems of Preventive Medicine. By Burnside Foster, St. Paul, Minn. 1903.—Renal Decapsulation for Chronic Bright's Disease. By George M. Edebohls, New York City. 1903.—The Local Use of Iodine in Corneal Ulcers. By J. Lawton Hiers, Savannah, Ga. 1902.—The Giant Magnet in Ophthalmic Surgery. By Leartus Connor, Detroit, Mich. 1903.—Indications for the Performance of the Mastoid Operation. By W. C. Braislin, Brooklyn, N. Y. 1902.—Pes Equinovarus. By G. G. Davis, Philadelphia. 1902.—I. A. Brace for Antero-posterior Curvature of the Spine. II. A Flexible Curve for Body-tracings. By G. G. Davis, Philadelphia. 1902.—Indications générales du traitement dans le pied-bot varus-equin congenital. Par A. Broca, Paris, France. 1903.—Annuaire de la Société Française d'Hygiène, 1902.—Que Doit-on Boire? Boissons bienfaisantes—Boissons à redouter Falsifications. Par Dr. Ladreit, de Lacharrière, et A. Joltrain, Paris. 1902.—Ueber die Veränderung der Refraction und Sehschärfe nach Entfernung der Linse. Von Dr. K. Bjerke. 1902.—Om Näringsämnenas Betydelse för Muskelarbetet. By Simon Johannes Boëthius and Lars Olaf Jonathan Söderblom, Upsala. 1901.—Experimentalla Studier öfver den Intravenösa och Subkutana Saltvatteninfusionens värde vid Akut Anämi. By Fredrik Zachrisson, Upsala. 1902.—Manual of International Classification of Causes of Death; Medical Education in Vital Statistics; Legislative Requirements for Registration of Vital Statistics; Practical Registration Methods; Relation of Physicians to Mortality Statistics. United States Census Office, Washington, D. C. 1903.

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THE VERMIFORM APPENDIX AS AN ACTIVELY FUNCTIONATING ORGAN.

DR. DANIEL H. CRAIG, in the May issue of the *Annals of Gynecology and Pædiatry*, of Boston, editorially analyzes the following question: "Is the appendix an actively functioning organ?" We take the liberty of reproducing the entire paper, not only because of its intrinsic value, but because it introduces views of our own which have recently received considerable, though indirect, substantiation in

the Hunterian Lectures, delivered by Mr. McAdam Eccles before the Royal College of Surgeons of England.

"It is easy to believe," writes Dr. Craig, "that a structure occasionally and irregularly present in the body is either due to a developmental arrest or is vestigial, but it is not easy to reconcile the idea of the regular and persistent appearance of a structure devoid of all functional purpose through countless generations with our admiration for all the mechanical and physiological perfections of the human mechanism. Yet the appendix cæci, or, as more commonly known, the appendix vermiformis, is, so far as we know, as regularly present as any other portion of the gastro-intestinal tract.

"Many authors have assumed that this structure is purely vestigial. Assuming the Darwinian theory to be basally correct, the appendix in our progenitors was an actively functionating and necessary portion of their anatomy which has, owing to greater perfection of its co-operating organs, become, in man, superfluous and is gradually disappearing. Yet there is little, if any, evidence to support this theory in our actual knowledge, and physiologists have been prone to accept it only because it has thus far been difficult in the extreme to substitute any more plausible theory for the one now current.

"There are, however, a few factors which directly controvert such a belief. Practically, all structures having ceased to be of value gradually cease to contain, or be composed of any active cellular material, coming finally to exist merely as fibrous cords. As examples of this may be cited the ductus arteriosus, the ductus venosus, the obliterated portions of the hypogastric arteries, and other similar examples. In these instances it takes merely a few weeks to complete this obliteration, and it does not seem as though Nature would find it so much more difficult to do away with another structure as to be obliged to employ generations of human beings to accomplish it. Yet this is, of course, entirely supposititious. It does not necessarily follow that she could as easily obliterate the lumen of a scarcely larger tubular structure, but it seems probable. It certainly does suggest that, if its lumen remains persistently patulous and retains active cells which are, to say the least, the exact morphological counterparts of cells elsewhere assigned a function, it is for a purpose. If this assumption is correct, then the appendix has a function.

"That the appendix vermiformis is anatomically capable of performing a function is attested by authority so strong as to be virtually unassailable. Two authorities alone will be sufficient in this place to satisfy even the most skeptical that this is true. These authorities are Gray and Foster.

"Gray ('Anatomy, Descriptive and Surgical,' thirteenth English edition, page 1033) says: 'Its walls present the same layers as seen in the colon, and its whole mucous membrane is closely studded with solitary glands. It is usually hollow to its extremity, and its lumen communicates with the cæcum by a small orifice often guarded by a valve.' Gray later refers to the opinion of Ribbert and Zuckerkandl that, as with other functionless structures, the lumen tends, late in life, to become obliterated; but he neither affirms nor denies the truth of this opinion.

"Foster's ('Text-book of Physiology,' fifth American edition, page 375) statement as to the appendix is as follows: 'Lymphatic follicles are abundant in the

large intestine, the cæcum and especially the appendix vermiformis being crowded with solitary follicles.' Other quotations equally authoritative would be a mere work of supererogation.

"Such being the anatomical construction of the appendix, it would seem *à priori* that, if it possesses a function, it is that of the follicles with which it is so richly endowed. But all literature has been very vague as to the actual function of the follicles. Their function has been indefinitely and variously connected with the lymphatic system, and but little more than vague theorizing has been available.

"Recently, however, Sajous ('Internal Secretions and the Principles of Medicine,' volume i) has advanced an entirely new interpretation of the anatomical and physiological findings regarding these follicles. According to his interpretation, both the solitary and the agminated follicles (Peyer's patches) are cytogenic structures whose function is to guard the body against the entrance of noxious substances from the intestinal tract and to destroy as much noxious material as possible—*i.e.*, pathogenic bacteria, products of putrefaction, etc.—within the lumen of the intestine. To state most briefly his findings it is merely necessary to quote the conclusions appended to the chapter, in which all the facts gleaned by himself and many others are most convincingly arrayed.

"Sajous concludes that: 'The solitary and agminated lymph-follicles (Peyer's patches) are cytogenic structures which further asepticize the materials absorbed by the surrounding villi, the efferent lymph-vessels of the latter constituting the afferent lymph-vessels of the follicles where both kinds of organs occur together: *i.e.*, in the portion of the small intestine in which pullulation of pathogenic bacteria is most likely to occur,—the ileum particularly.

"'The solitary and agminated lymph-follicles also supply leucocytes to the intestinal cavity, which leucocytes are formed in their cytogenic area (Flemming's central nodule) and pass out through the fenestrated membrane overlying each follicle. The purpose of some of these leucocytes is to insure the destruction of pathogenic bacteria formed as a result of putrefaction of intestinal contents or introduced into the intestine.

"'The cæcum, being particularly exposed to the accumulation of putrefactive materials, is supplied with an organ in which agminated lymph-follicles are particularly numerous: *i.e.*, the vermiform appendix. The functions of this organ, therefore, appear to be to supply the cæcum with bactericidal cells and their products: *i.e.*, phagocytic leucocytes and alexocytes—in addition to those supplied by the cæcal agminated follicles—and antitoxic blood-serum.'

"If such is actually the function of the appendix, we should be able to note at least a temporary increase in fermentative and putrefactive changes taking place in the cæcum after removal of the appendix. Are some of the symptoms so commonly complained of by patients having made excellent operative recoveries from appendicectomy due to this cause? Pain in this region is not uncommon under these circumstances, and has been variously ascribed to unabsorbed suture or ligature materials, to compression of nerve-filaments, to postoperative adhesions, and many other causes. It will be interesting to carefully investigate this point and learn if we have mistaken *propter hoc* for *post hoc*.

"If the opinions advanced above are sound, even in part, it must serve to lessen

the enthusiasm of those surgeons who, following the suggestion of Kelly, are adding appendicectomy of the *normal* appendix to all other abdominal operations when not distinctly contra-indicated. Even enthusiastic efforts in the direction of preventive medicine cannot justify the removal of a sound, actively functionating organ."

Commentary.—In his Hunterian Lectures on "Some Points in the Anatomy and Pathology of the Vermiform Appendix," February 9th, 11th, and 13th,¹ Prof. McAdam Eccles refers to the physiology of this organ in the following words: "Practically little or nothing is known concerning the physiology of the tube, and it may be that its physiological functions are in reality insignificant, though they may have some bearing upon its pathology. There are two conflicting ideas as to its primary functions: one that it is entirely an absorptive organ, the other that it is purely an excretive gland. Probably the real truth lies in the statement that it is in part absorptive and in part excretive."

The first function ascribed to the organ can reasonably be assumed, owing to the presence of "extremely well-marked lymphoid follicles, large lymphatic spaces, and channels," but the lecturer points out that the absorbing surface is "infinitesimal when compared with that of the adjacent small and large intestine." Again, he calls attention to the fact that it is "well-nigh impossible even under pressure, to distend the lumen of the appendix by distending the cæcum with fluid," even when the cæcum is submitted to distension by fluids imprisoned therein as a result of constriction of the colon. Again, the appendix being never a receptacle for meconium, it does not appear likely to Mr. Eccles that the organ often has any liquid contents to absorb "other than what it has itself *secreted*." He also calls attention to a point of interest, viz.: "that the action of the muscular fibers forming one of the coats of the tube tend, when they contract, to force its contents *toward and into the cavity of cæcum*."

Anatomical features are outlined by the lecturer which further indicate that the appendix is a secretory organ. Referring to its communication with the cæcum proper he says: "This connection is merely, as it were, a safety-valve against explosion, and not, in the vast majority of cases, the entrance through which an irritant foreign body passes into the tube. It is frequently after this communicating aperture has become abnormally closed that trouble ensues rather than when it is unusually patent. The caliber of this aperture, while amply sufficient in its natural state to allow the free evacuation of secretion from the mucous membrane of the tube itself, is not great enough to permit the entrance into the lumen of the appendix of bodies of considerably smaller dimensions than those which have been said to have passed through it." He also lays stress upon the fact that "the passage from the cæcum into the appendicular canal is, as it

¹ Lancet, March 14, 1903.

were, hidden away under the loose folds of mucous membrane which surround it,"—an arrangement which normally tends to prevent the entrance of substances into the appendicular cavity. The direction in which the organ's aperture faces is also rendered suggestive by Mr. Eccles when he says: "In at least two of the fairly common positions of the appendix—namely, when lying upward and inward or directly upward—its orifice is, in reality at any rate, in the upright position at the most *dependent* part of the tube, and this facilitates the *exit* of the secretion." While bacteria, which may easily find their way into the appendicular canal, are of course excepted, the lecturer deems it wonderful that the "various pointed foreign bodies found within the lumen of the tube" should "have discovered the narrow aperture, cast around, as it is, with everything that would seem to *block the way*."

Finally, the histology of the submucosa is such as to have suggested to Mr. Eccles the term "lympho-mucosa," and he refers to the fact that the comparatively enormous development of the lymphoid tissue in the organ had caused it to be called by some the "intestinal tonsil." Lymph-spaces had been found by Lockwood, Clado, and others, while he has himself under a high power made out a distinct endothelial lining. The appendicular masses of lymphoid tissue are stated to persist throughout life, "though yet they proportionately certainly become less as age advances."

It would be difficult to adduce stronger evidence in favor of the assertion that *the vermiform appendix supplies a bactericidal and antitoxic secretion to the caecal contents*. Mr. Eccles, who mainly bases his remarks in this connection upon a study of two hundred cases in the dissecting and postmortem rooms, shows (1) that the valvular arrangement of the appendicular orifice is to prevent the entrance of substances into the organ and to facilitate the escape of its contents, and (2) that the muscular mechanism is such as to propel the appendicular contents toward the caecal cavity. The lymphoid elements of the organ are prototypes of others found elsewhere. S. L. Corpe² in experiments on dogs found that the fluid secreted by the appendix "is much greater in quantity than we would suppose, judging by the size of the appendix," and estimates that it secretes "about four ounces a day." He likewise terms the secretion "a powerful germicide."

C. L. Kilbourn, of New Haven,³ after a careful embryological, histological, and pathological study of the appendix, writes: "An enormous amount of microbial fermentation is constantly going on, as is shown by the hydrogen and marsh-gas generated. Of late a great deal is being written about intestinal sepsis and anti-sepsis. In specific diseases, such as typhoid fever and dysentery, the idea is not

² Medical Sentinel, May, 1903.

³ Philadelphia Medical Journal, May 17, 1902.

recent, for therapeutics have long aimed at intestinal antiseptics in combating them. But in the vague cases associated with neuralgias, myalgias, headache, lassitude, slight fever, and even lethargy, a great deal of stress is being laid upon the absorption of toxins from the alimentary canal, especially the large intestine. There must be some protection against this condition normally, and I think we find it in the appendix. The germicidal properties of the tonsils and their protection of the pharynx are well realized. And in the appendix we must recognize an organ having a similar structure and capable of doing a similar work in its own territory. Its situation is particularly adapted to act upon the contents of the colon, its secretion being able to act immediately upon the food as it passes through the cæcum."

What is the nature of the bactericidal and antitoxic process in the cæcal pouch? As our own researches have led us to interpret it, it is due to local phagocytosis and trypsin digestion. Stewart⁴ states that "lymph has been defined as blood without its red corpuscles (Johannes Müller)," and adds, "it is, in fact, a dilute blood-plasma containing leucocytes, some of which are common to lymph and blood. . . ." Metchnikoff⁵ has shown that the digestive ferment of phagocytic leucocytes belonged to the category of the trypsins. Our own researches, for which we must refer the reader to Chapters XI and XII of our work,⁶ have led us to conclude that blood-plasma and its kindred secretions, milk and lymph, depended upon trypsin—*plus* heat energy liberated by the action of the plasmatic adrenoxins upon fibrinogen—for their bactericidal and antitoxic virtues.

In answer to the self-imposed question, Why does the body not exhibit symptoms of toxæmia after the removal of the appendix? Kilbourn answers⁷: "In the first place, because this toxæmia is not often of a serious nature and is usually attributed to another cause, the constipation meanwhile being corrected and the diet regulated. In the second place, because other lymphatic structures, such as Peyer's patches, take up the work of the appendix. The organ is probably missed, but the loss is not always apparent to the patient or physician." We are inclined to believe that the loss of the appendix is not apparent to the physician because he seldom inquires into the after-history of such cases. Richelot⁸ has emphasized the fact that after surgical removal of the appendix there may still be pains which simulate, at least in some respects, those of appendicular inflammation, while other observers have referred to constipation, abdominal pain, etc., as commonly observed after successful operations. If our views are sound, the

⁴ "Manual of Physiology," 1900.

⁵ "L'Immunité dans les Maladies Infectieuses," Paris, 1901.

⁶ "The Internal Secretions and the Principles of Medicine."

⁷ *Loc. cit.*

⁸ Journal des Praticiens, February 19, 1898.

vermiform appendix performs functions similar to those of lymphatic glands elsewhere in the intestinal canal. It is, therefore, an extension of the protective system of the latter in a region which doubtless demands it. To consider the appendix as a useless organ in the light of the foregoing data is, therefore, an error, and to remove a *normal* appendix in the course of "all other operations when not distinctly contra-indicated" is unscientific and therefore unsurgical. As emphasized editorially by Dr. Craig in the *Annals of Gynecology and Pædiatry*, "preventive medicine does not justify the removal of a sound, actively functioning organ."

Quite another state of things appears, however, when an inflammatory process invades the appendix, for it then suddenly assumes a degree of importance out of all proportion with its position in the economy as an accessory structure, and exposes the patient's life as much as if it were a major organ. Reliable statistics show that under these circumstances an early and skillfully performed appendicectomy is indicated, even though localized discomfort, constipation, and other of the smaller ailments follow.

C. E. DE M. SAJOUS.

Cyclopædia of Current Literature.

ABDOMINAL AFFECTIONS, EXPLORATORY CÆLIOTOMY IN OBSCURE.

The moral responsibility of the surgeon is much greater than formerly, and exploratory operations are more frequently indicated now that the importance of the surgical diseases of the stomach, gall-bladder, and pancreas is generally recognized. The writer believes that the mortality of operation for typhoid perforation need not exceed 25 per cent. in competent hands, and may be less if the operation is early. If the patient is in bad condition, local anæsthesia under cocaine may be employed, but this the writer believes is seldom necessary. He had operated in three cases, with one death occurring the third day after operation. One cause for high mortality is the neglect of medical men to call in a surgeon early. In future he believes the mortality will be greatly reduced. Exploratory operations are fre-

quently indicated for chronic peritonitis, generally caused by inflammatory diseases of the appendix, gall-bladder, or pelvic organs. He prefers the right rectus incision for exploration and denounces indiscriminate exploratory operations; on the other hand, to refuse to operate when other means of diagnosis have failed is frequently to sacrifice human life to prejudice. J. E. Moore (Proceedings of the American Medical Association; American Medicine, May 16, 1903).

ADRENALS; "FUNCTIONAL CLAUDICATION."

The writer reports two cases in one of which chronic alcoholism and malaria had given rise to cirrhosis of the liver, hypertrophy of the spleen, and gastric disturbances. The facts that biliary pigment was absent from the urine and that the feces were well colored by the bile

led the author to the conclusion that the pigmentation present in the skin was due to Addison's disease rather than to icterus, as might have been supposed from the liver lesion. The hypothesis is advanced that, although the function of the liver-cells sufficed for the elaboration of bile, the defensive powers of that organ were weakened, and consequently noxious products of intestinal toxæmia and incompletely reduced waste-products of nutrition gained access to the blood, and these, finally reaching the kidneys, acted as irritants to those organs, the suprarenals, in turn, by reason of their intimate relation with the kidneys, being affected through extension of the morbid process in the latter. Hence the term "functional claudication" applied to the condition of the adrenals by the author. In both cases, a complete and rapid cure was effected by injections of an extract of the suprarenal capsules according to the formula of Brown-Séquard. T. Suarez (*La Semana Médica*. Buenos Ayres, Feb. 5th; *New York Medical Journal*, April 11, 1903).

ACTINOTHERAPY, RECENT ADVANCES IN.

Rays cause specific inflammation of skin and deeper tissues: they are vigorously bactericide and stimulate the general organism reflectorily. They may traverse the entire body and affect a photographic plate. Penetration depends on the ampèreage. Instruments running on from 2 to 10 ampères are only of use for the most superficial skin work, and cannot be employed for deeper affections or internal organs. Lamps using sunlight or running on currents of from 40 to 100 ampères are required. There is, therefore, a marked tendency to return to the original Finsen model or the American improvement of it, the

antinolite. W. S. Gottheil (*Transactions of the American Medical Association*, May, 1903).

ALBUMINURIA IN DIABETES MELLITUS.

Albuminuria is a frequent occurrence during the progress of diabetes, over one-third of all cases manifesting this symptom at some time during their course. Albuminuria in diabetes may for clinical purposes be divided into two varieties, toxic and degenerative. Toxic albuminuria is generally of acute onset, arising during the later stages of the severe form of the disease, as the result of irritation of the tubular epithelium, producing hyaline degeneration thereof, and due to the presence of acid toxins in the blood and urine. Toxic albuminuria is an invariable precedent and accompaniment of coma, and may be regarded as of the greatest prognostic significance. Toxic albuminuria and its associated renal changes are the final determining cause of coma diabeticum, by producing a heaping up of sugar and toxins in the blood, through diminished permeability of the renal secreting structure. Degenerative albuminuria occurs with great frequency during the progress of the mild type of the disease, and was of renal origin and produced by a gradually developing nephritis, which arose from prolonged hyperfunction and impairment of renal nutrition. The appearance of albumin under the circumstances, while of little immediate significance, is of the greatest eventual importance, as indicating the intrusion of chronic nephritis into the already manifold clinical difficulties. A few cases of albuminuria in diabetes may be produced by venous stasis due to cardiac asthenia, and under such circumstances will be associated with other evidence of heart-failure. Albuminuria in diabetes

is never devoid of importance. It may be of the greatest significance, and is always of sufficient import to receive the earnest attention of the clinician. A. R. Elliott (Proceedings of the American Medical Association; Boston Med. and Surg. Jour., May 21, 1903).

ALOPECIA.

The following lotion is recommended:—

R̄ *Pilocarpinæ* nitrat., 0.50 (gr. viij).
Tinct. cantharidis, 10.00 (5iiss).
Glycerini, 25.00 (5vj).
Aq. Cologniensis, ad 240.00 (5vij).

It should be rubbed over the scalp with a soft brush every night. (Bulletin Général de Thérapeutique, Jan. 30, 1903.)

AMÆBIC DYSENTERY.

At the Johns Hopkins Hospital 119 patients have been admitted in fourteen years. Amœbæ may be found in the stools of apparently healthy persons. They are confined to the colon for the most part. Liver and pulmonary abscesses may occur, and the germ may be found in the buccal cavity, in carious teeth, etc. Little is known of the source of amœbic infection. Inoculations with the germ are negative. It is probably derived in the same way as is typhoid bacillus. It is not confined to the tropics, occurs in both young and old, the very large preponderance in personal cases being in males. The whites appear somewhat more susceptible than the blacks. Anæmia exists, but there is no diminution in the red cells; there is some leucocytosis, and the hæmoglobin averaged in the reported cases, 63 per cent.; abscess cases, 66 per cent. Some 20.3

per cent. of the cases developed hepatic abscess. The amœbæ probably reach the liver by the portal circulation. Malaria was associated in 5 of these cases. Most of the cases occur in the third decade of life. No means of treatment appears to be entirely successful and many relapses occur. T. B. Fletcher (Proceedings of the American Medical Association; Amer. Med., May 16, 1903).

AMÆBIC DYSENTERY, PATHOLOGY OF.

Necropsy findings of those dead of amœbic dysentery. Emaciation is often extreme, peritonitis may have occurred, adhesions may have occurred between the walls of the intestines or between the latter and the parietal peritoneum. The wall of the gut may be very thin in some places and thick in others, thus presenting a very irregular condition as to thickness. In one-half the cases the ulcers do not extend above the transverse colon. The edges of the ulcers are undermined, and the oblong ulcer has its greatest length transverse to the axis of the bowel. The pathological process is usually confined to the colon, but may extend to the small intestine and even the appendix. The early changes occurring in the bowel are not well understood. He detailed the sequence of events in the case of the puppy, as they occur after receiving an injection material containing the living amœbæ. He detailed the microscopical findings in and about the ulcer. Tissue damage is always well in advance of the amœba itself; so that if necrosis is caused by the germ it must occasion it by elaborating a toxin. Liver abscesses not infrequently occur; out of 90 cases there were 15 cases of hepatic abscess, 3 of which penetrated the diaphragm. The germ most likely reaches the liver by way of the portal circulation. There are three forms: (1) very mild

form, (2) moderately severe form, and (3) very severe form. The acute symptoms are not unlike other forms of Southern diarrhoea. Then there seems to be some improvement in ten to twenty-one days, when the process often becomes chronic. It runs an irregular course and many recover soon. Bodily exercise, alcohol, etc., appears to increase the symptoms. There is often aching of the back, œdema of face and feet, and lenteric dysentery. H. F. Harris (Proceedings of the American Medical Association; Amer. Med., May 16, 1903).

APPENDICITIS, TOILET OF THE PERITONEUM IN.

In case of general infection of the peritoneum, the best technique consists in thorough irrigation with salt solution by means of tubes so contrived that the current is directed toward the incision. The writer advocates the establishment of drainage in the lumbar region and advises the use of 1 in 2000 bichloride gauze. He believes evisceration and scouring under any conditions whatsoever to be a most unsurgical procedure. G. R. Fowler (Proceedings of the American Surgical Association; Medical News, May 16, 1903).

ARTERIOSCLEROSIS, NEW SYMPTOM IN THE DIAGNOSIS OF.

The movability of the apex-beat offers a symptom of importance hitherto not described in the diagnosis of sclerosis of the root of the aorta. Normally the impulse lies in the fifth space, between the mammillary and parasternal lines, and migrates, in the left lateral decubitus, to a position midway between the anterior axillary line and the mammillary. Its displacement is about 3 centimeters. In sclerosis of the root of the aorta this displacement may amount to 4 or 5 cen-

timeters and the impulse may appear in the axillary line beyond. The phenomenon is due to the fixation of the base of the heart, as a pivot, a firm center, around which the heart swings, and, secondly, to the elongation of the heart, which expresses the hypertrophy of the left ventricle. No other pathological condition presents this symptom in equal degree. In the "nervous heart" of the young there is, indeed, a somewhat increased displacement, but it is far less in degree. On the other hand, advanced cases of tuberculosis or marasmus also present the phenomenon, owing probably to the decreased resistance of the lungs, but here also there is no possibility of confusing the conditions. S. Miraglia (Proceedings of the International Medical Congress; Medical News, May 23, 1903).

BRACHIAL PARALYSIS, POSTNARCOTIC.

Paralysis of part or all the muscles supplied by the brachial plexus with some sensory involvement is not uncommon after narcosis, though rarely mentioned. Its cause is not toxic, but mechanical. It occurs only when the arms are long held above the head or lie in abduction; never if they lie flexed on the chest. The mechanism is a pressure on the nerve-roots, probably between the clavicle and the muscles over the transverse processes of the cervical vertebrae, or from stretching over the head of the humerus in abduction. The trouble is essentially functional without known lesions. The lost function returns *in part* very early. Total recovery is often long delayed, but apparently is to be counted on. The possibility of the accident should be impressed on students, on house officers, and on all of us. In view of this risk the arms of a patient under ether should always, when possible, be

flexed with the hands on the chest. If other positions are unavoidable, they should not be continued without change. F. J. Cotton and F. W. Allen (Boston Med. and Surg. Jour., May 7, 1903).

CANCER OF THE RECTUM, EVOLUTION OF THE TREATMENT OF.

The main objections to the operations of the past are ineffectual removal, with local recurrence so common in the perineal type; the extensive mutilating character of the Kraske before operative conditions were known; the frequent failure of all methods of union of proximal and distal portions of the bowel, which, when united and anus saved, with the destruction of the levator ani and internal sphincter, represented but one-third of the controlling apparatus of the bowel; the frequent formation of stricture, either cicatricial or cancerous, following operation, necessitating inguinal colostomy; the straightening and tension of the sigmoid destroyed it as a faecal container. Sentiment, and not chance, has proven the main reason for continuing to place an uncontrollable anus in a comparatively inaccessible situation. The combined intraperitoneal and perineal method permits the surgeon to suit the procedure to the individual case. He can either radically remove the tumor and glands or he may simply do a colostomy. When total removal is performed, the proximal portion of the bowel, which is the sigmoid, can be brought out of the abdomen in the left iliac fossa through the gridiron opening of McBurney, which gives a fair control of the bowel and does not destroy the function of the sigmoid as a faecal container. C. H. Mayo (Journal of the American Medical Association, April 25, 1903).

CHRONIC SUPPURATION WITHIN THE TEMPORAL BONE, FRAGMENTARY CONTRIBUTION TO THE OPERATIVE TREATMENT OF.

The writer's method in such cases is briefly as follows: (1) the removal of the disease and the fashioning of the metal flap; (2) one week later the epithelial grafting operation; (3) a few days (from the sixth to the ninth day) after this, and the earlier the better after the graft has taken, the removal of the dead portion of the graft as a deliberate measure; and (4) dry gauze tamponing through the meatus until the gauze comes away unstained. In three weeks the inner bony boundary is dry, and any moisture which appears on the plugs later is from the inner surface of the mastoid flap. The critical part of the healing process is thus early completed. What happens afterward is of less moment. In from five to six weeks from the first operation, in the majority of cases, the operation cavity is soundly healed. No other method can be relied upon to give such satisfactory results. C. A. Ballance (Lancet, April 11, 1903).

CYANOSIS, CHRONIC, A NEW CLINICAL ENTITY.

The writer described certain cases of chronic cyanosis with polycythæmia and enlarged spleen which he believes constitute a new clinical entity. The first case that came under his observation was that of a physician, 54 years of age, whom he had long known and in whom, because of the almost permanent cyanosis, he had been very much interested. Notwithstanding the cyanosis, the man seemed never to be short of breath. The writer thought that he was probably the subject of chronic emphysema. On examination, however, he was surprised to find that there was no emphysema, no

heart trouble, and only very slight albuminuria, with an occasional hyaline cast. His blood condition was, however, very remarkable, in that there were 10,000,000 red blood-corpuscles. There was a slightly enlarged spleen, but the number of white blood-cells was about normal. The second case had been five times in his ward at Johns Hopkins, with remarkable cyanosis affecting his whole body and causing him discomfort, though, as in the former case, there was no lung or heart trouble, and only slight albuminuria. This patient had 7,000,000 to 11,000,000 red blood-corpuscles. There was no leucocytosis. The hæmoglobin value of the blood was very high. In a third case seen the patient was a woman suffering from no emphysema, no heart trouble, but with a red blood-count of from 9,000,000 to 11,000,000. She had been literally cyanosed for ten years. Her hæmoglobin value was 165 per cent. As in the former cases, there was a slight enlargement of the spleen, some slight albuminuria, and a tendency to constipation.

Usually when patients walk into a physician's office with marked cyanosis he thinks either of congenital heart disease or of emphysema. Occasionally heart patients may be on their feet with severe cyanosis. At times, tuberculosis of the lungs causes marked cyanosis. These cases, however, form evidently a group by themselves. It is to be noted that in congenital heart cases the count of the red blood-cells is usually higher than normal. The appearance of the patient, however, must not be taken as an index of the condition of the blood. Some patients have an extra hyperæmia of the skin with anæmia. This is the so-called anæmia rubra. In one of the writer's cases this florid appearance was preserved until the number of red cells fell

below 1,500,000. As an index of how little appearances count for as regards the blood-condition, the writer recently asked a hospital physician to count the blood from the pale ear, the cyanosed foot, and the normal-looking hand of a hospital patient. The three blood-counts agreed very well. Dr. Cabot has reported several of these cases, and other observers have evidently come upon the same symptom-complex, though without as yet definitely realizing that it was a distinct entity and to be considered by itself. William Osler (*Proceedings of the Association of American Physicians; Medical News*, May 16, 1903).

CYSTOCELE, THE REPAIR OF.

Success in the repair of cystocele rests on an adequate conception of the anatomy of the anterior vaginal wall. The wall is firmly attached at its lower end to the pubes and at its lateral edges and upper lateral corners to the pubo-coccygeal and allied transverse muscles. These are only reinforced by the support of the posterior wall below. During labor the entire vagina is distended. The supports of the posterior wall are distended and often lacerated, but the supports of the anterior wall are subjected to little strain during the passage of the head. After labor the anterior wall is distended, but its edges are held firmly in place. When cystocele supervenes, a portion or all of the anterior wall remains distended and useless, while its attachments are usually intact. Cystocele is a hernia of the bladder through the foramen formed by the attachments of the anterior vaginal wall. It is to be treated by excision of the hernial sac—the anterior vaginal wall—after separating it from the bladder, and suture of the raw edges of the firm tissues directly to each other. The exact shape of the

excised portion is less important than the fact of its excision. The technique of the operation. Report of cases. Ultimate results. E. Reynolds (Transactions of the American Medical Association, May, 1903).

DIABETES, PATHOGENESIS OF.

The exact truth of the pathology of diabetes is not known. There are no acknowledged and constant anatomical appearances of liver or of pancreas associated with diabetes. There are no characteristic lesions in any other organ. An impairment of the physiological functions of the ductless glands may be at the root of the disease. Artificial glycosuria is not diabetes. The facility with which this phenomenon can be elicited implies its insignificance as a pathological factor. As far as can be ascertained from competent sources, there is hope that the vacuum in our knowledge of the nature of diabetes will soon be filled. H. S. Stark (Medical Record, April 25, 1903).

DIETETICS.

The food yields enough potential energy to supply the daily outgoings from the body in the form of heat and work, and it contains enough proteid to replace the daily and inevitable destruction of tissue. There are three great groups of diseases in which one can reasonably anticipate that dietetic means will be potent for cure; these are: diseases of the organs (stomach and bowels) which prepare and elaborate the food; diseases of metabolism (*e.g.*, fever, obesity, malnutrition, diabetes, and gout) in which there exists a perversion of the usual methods of dealing with the nutritive constituents of the food by the cells; diseases of the excretory organs (especially the kidneys) which are concerned in re-

moving from the body the end-products of the food. Robert Hutchinson (Lancet, April 25, 1903).

DIPHTHERIA OF THE NOSE.

Primary diphtheria of the nose is here considered as distinct from diphtheritic rhinitis when complicating faucial diphtheria. It usually involves both nostrils, but rarely spreads into the pharynx or larynx. It differs from so-called "membranous" or croupous rhinitis chiefly bacteriologically, but more careful and frequent examinations tend to show the same relation between these two as between membranous croup and laryngeal diphtheria. The diagnosis is not difficult on a careful rhinoscopic inspection, and is corroborated by one or more bacteriological examinations. The constitutional disturbances are usually mild except during the onset, when they resemble, and are usually mistaken for, a violent coryza. Treatment should be both local and constitutional. Diphtheritic antitoxin is not usually administered, on account of the mildness of the disease, but might be made use of to shorten the duration of the diphtheritic rhinitis and diminish the danger of infection. W. Scheppegegrell (Transactions of the American Medical Association, May, 1903).

DYSENTERY, ACUTE, TREATMENT OF.

The writer divides treatment into three varieties: (1) dietetic, (2) internal remedies, and (3) topical applications. Rest in bed, with proper air and regulation of diet, is a most important element in the treatment of these cases. The diet should be liquid,—milk and albumin-water preferred. Fats and the carbohydrates should be excluded. Internal remedies should consist of ipe-

case, which the writer prefers to give in small doses and give frequently rather than in large doses. Vomiting should be avoided during its administration by rest in bed and absolute quiet. Saline purgation should be employed only in the early stages; later it does harm. Aromatic sulphuric acid is beneficial. Opium may be necessary to relieve the pain and tenesmus and bismuth should not be forgotten. He questions the efficacy of an intestinal antiseptic, but salol may be given on general principles. Sulphur does good in many of these cases. The serum treatment has not proved successful. Among topical applications he recommends bowel irrigation with some of the astringents or with an astringent alternating with a feebly antiseptic solution. Irrigation is more efficacious in amœbic dysentery than in the bacillary forms. Warm solutions are sometimes efficacious. J. M. Anders (Proceedings of the American Medical Association: Amer. Med., May 16, 1903).

ENTERORRHAPHY, CIRCULAR.

The requirements for an ideal method: it must be applicable to pathological as well as normal tissues, it must give the least amount of lessening of the lumen of the bowel, and it must be speedy. Then he submitted his method, in which he first cuts through serosa and muscularis, then by gauze dissection rolls this back in the shape of a cuff. Next he cuts through the denuded stump. This is practiced on one end of the bowel in resection, and, after the gut is resected, the other end is sutured to the denuded stump, and the cuff then rolled back over the line of junction and sutured. This gives reinforcement of the line of suture and perfect protection against leakage.

He claims the following points in its favor: Unchanged caliber of the bowel lumen, leakage obviated, practical and easy to perform, pressure necrosis not needed in repair, least complicated, gives rapid convalescence, and is applicable to all parts of the intestine. He submitted a report of experiments upon dogs to sustain these claims, also reporting in detail two cases in which this procedure has been tried with 50-per-cent. mortality. Beverly Campbell (Proceedings of the American Medical Association; Philadelphia Medical Journal, May 16, 1903).

GASTRIC AND DUODENAL HÆMORRHAGES, THE TREATMENT OF.

Hæmorrhage from the stomach is due to disintegration of the blood-vessels in consequence of ulceration, seldom of erosions. Duodenal hæmorrhage is almost always due to a distinct ulceration of this portion of the intestine. Before considering the treatment the writer dwells at some length on the diagnosis; but he thinks there should be no great difficulty in arriving at a correct diagnosis if the history and symptoms are intelligently interpreted. The method of treatment outlined is as follows: Measures directed toward checking the bleeding and combating the underlying disease producing the hæmorrhage. Small hæmorrhages, as a rule, require no treatment whatever. Larger hæmorrhages require absolute rest, total abstinence from food and drink, and the administration of opiates to quiet peristalsis and to calm the patient. An icebag should be placed over the epigastrium, and of the drugs to be used gelatin subcutaneously or adrenalin are the most resourceful. Max Einhorn (New York Medical Journal, May 2, 1903).

GOUT, ACUTE, TREATMENT OF.

In the treatment of acute gout the following factors should be taken into consideration: (1) the sex of the patient; (2) the age of the patient; (3) heredity; (4) physical signs of the gouty diathesis. The general indication for treatment is elimination, and this is produced by mercurials, salines, and diuretics. Prevention of reaccumulation and the exhibition of specifics complete the treatment. Colchicum is advised as long as there is pain, to be diminished to one dose in the morning when the pain has subsided. J. R. Clemens (Medical News, April 25, 1903).

GYNÆCOLOGICAL WORK TO-DAY, THE TREND OF.

There is shown a marked tendency toward conservatism in operative work. A quarter of a century ago conservative surgery upon the uterine appendages was unknown. To the students of the star actors of a quarter of a century ago must be given the credit of making the effort to rescue womankind from enthusiastic aspirants for surgical honors who could only see radical removal of all in their path as the road to success. How many thousands of suffering, misguided women have offered up their pelvic organs as a sacrifice only to find that they had changed one condition of suffering for another equally as disagreeable! Yet these sacrifices are resulting in ultimate good. During this period the use of electricity as a method of treatment was of short duration. Conservatism of whatever nature was for a time lost sight of. It was not until the nerve specialists called attention to the fact that we were sowing the wind and reaping the whirlwind that many of us realized what we were doing for these poor women,—prematurely endowing

them with hot flashes, the rapid taking on of fat, the loss of their generative function, and regrets for their unsexing. The writer tries to save only what he thinks will perform its function normally. In all, he has operated upon 269 cases in this way, and without a death until the last week of 1902, when he lost two from septic peritonitis, introduced by the hands of a septic house surgeon. In doing conservative surgery upon the tubes and ovaries the first thing to do is to put the inside of the uterus into condition to become healthy. Plastic work may also be necessary. In deciding what to do, the age, the social position, domestic relations, the after-effects of radical work, and the dangers to which the patient is subjected should be determining factors. The writer does the plastic work first. He removes small fibroids from the uterus, in one case as many as sixteen, and leaves the appendages. He opens a hydrosalpinx, washes out the tube, and drops it back. If a tube is occluded at the uterine end (not as the result of sepsis from abortion or gonorrhœa), he does not hesitate to open it and wash it out. He leaves whatever healthy tissue may be found in a cystic ovary. A dermoid cyst requires, however, the most radical treatment. If requested to do so he would open the abdomen to determine the cause of sterility. After resecting an ovary he closes the wound with fine silk, ordinary floss silk No. 00, using a very fine cambric needle. The surgeon who now removes organs that could possibly be saved is open to the criticism of not being a conscientious man. Of 269 patients from whom he has removed portions of tubes and ovaries, coupled with various other procedures, the writer has so far been able to trace 43 pregnancies. Many of the 269 cases have been lost sight of. In

a case of salpingitis the fimbriated extremity is closed, dilated, and club-shaped. The tip should be opened with scissors, the contents evacuated, and the tube washed out with an antiseptic solution. The tube should be gently probed, and if the probe passes into the uterus we will know that the tube is patent. There is then no excuse for removing the tube, but with fine silk, the probe still in place, suture all around the tip of the tube, sewing the mucous membrane to the peritoneum. Hæmatosalpinx and hydrosalpinx are similarly treated. In pyosalpinx, if the pus is septic, it is well to precede the opening of the tube by its injection with 1 to 1000 mercuric chloride solution, its withdrawal and repeated injection. The tube may be afterward treated as suggested above. Ventrosuspension is often essential in conservative surgery upon the tubes. As soon as the patient comes out of the ether she should have a saline. The patient should be moved from one side to the other to prevent adhesions. The bowels should move at the end of twenty-four hours, the intestinal canal being the best drainage tube. Do not give morphine. No food should be allowed until after the bowels have moved. Then milk and Vichy should be begun. The patient should be kept in bed fourteen to sixteen days. If ventrosuspension has been done the stitches should remain in for twenty-one days. During and for two days subsequent to the first menstruation the patient should be kept in bed.

The results of many operators, the material secured by correspondence, were given. In 860 operations reported but 9 patients died. In 435 cases in which complete results are given the operation was successful in 396 and unsuccessful in 39 (10-per-cent. failures; 1-per-cent. mortality). There is but a slight pre-

ponderance of tubal and ovarian disease on the left side. The totals comprise 754 conservative and 522 radical operations upon the ovaries. The excess of conservative intervention is bound to increase in the future. As to tubal operations, there were 265 extirpations and 179 partial operations. As regards results, the general outcome of the operation and the preservation of sex must be considered. The primary mortality is quite insignificant, and, as regards ultimate success, the tables show not over 10 per cent. of failures. There is positive proof that at least 10 per cent. of the patients became pregnant, and there is every reason to believe that this does not represent the whole number. A. Palmer Dudley (Proceedings of the American Medical Association; Amer. Med., May 16, 1903).

HEART, WEAKNESS AND DILATATION OF, DUE TO CHRONIC NUTRITIONAL DISEASES.

Weakness and dilatation of the heart due to chronic changes in the myocardium is caused by various types of chronic nutritional diseases, and is of frequent occurrence in such affections. Microscopical changes may not be apparent, or we may observe interstitial myocarditis, or fatty, granular, or pigmentary degeneration. We cannot expect a normal and naturally acting heart in a chronically diseased and debilitated body. Perfect metabolism and normal innervation are essential to preserve the heart-muscle in its normal histological condition. Dilatation is caused by overstrain of the cardiac muscle, and the amount of stress which the cardiac muscle can stand is relative, depending entirely upon its condition, this depending in turn upon the general body condition. Slight grades of dilatation occur in all

the severer types of anæmia, and are common in chronic gastro-intestinal disorders. Treatment cannot be specific, but consists in removing the cause and combating by general medication and hygienic measures. The administration of constitutional remedies, improved nutrition, rest, graduated exercise, tonics, and saline carbonated baths constitute the treatment. G. W. McCaskey (Proceedings of the American Medical Association; Amer. Med., May 16, 1903).

HYPNOTICS, SOME DANGERS OF.

Hypnotics may all involve danger, and the conditions under which they may produce undesirable results are not always dependent upon the dose. The danger may be limited to the patient and may involve the prescriber or the dispenser. Before the employment of an hypnotic the bare symptom of sleeplessness is perhaps the least important factor to be considered. Nestor Tirard (Lancet, April 11, 1903).

INCOMPATIBLES.

We believe that a few hours' application should suffice to master the fundamentals of incompatibility in medicine, and with this object in view we have formulated a few rules which should make the acquisition of the necessary knowledge quite easy. In giving the rules, we shall mention only such substances as are generally and frequently prescribed.

Alkaloids.—Great care is necessary in prescribing these, because, most of them being potent drugs, precipitation may cause serious consequences, by an overdose of the alkaloid being poured out in one dose. Alkaloids should not be prescribed with: potassium hydrate, carbonate, and bicarbonate; sodium hydrate, carbonate, bicarbonate, and

borate (also phosphate); ammonia-water and ammonium carbonate; lime-water, iodides, bromides, tannic acid (or substances containing tannin); mercuric chloride; gold chloride. Besides the foregoing, quinine also is incompatible with salicylates and acetates. The reason the alkaloids are incompatible with the above enumerated substances is because the alkaloids are precipitated by them. For instance, if we prescribe morphine sulphate and ammonia-water or ammonium carbonate (or the aromatic spirit of ammonia, which contains those substances), pure alkaloidal morphine, which is but very slightly soluble, will precipitate; if we prescribe morphine sulphate and tannic acid, morphine tannate will precipitate; if we prescribe strychnine sulphate and mercuric chloride, a double salt of strychnine and mercury will precipitate, etc.

[N. B.—The alkaloids, or their salts, official in the "Pharmacopœia," are: apomorphine, atropine, cinchonidine, cinchonine, quinidine, quinine, cocaine, codeine, morphine, hydrastinine, hyoscyne, hyoscyamine, physostigmine, pilocarpine, sparteine, strychnine; in practice, codeine may be prescribed with alkalies, because the pure alkaloid is itself quite soluble in water.]

Tincture of Ferric Chloride.—The principal incompatibles of this much-prescribed tincture and of all ferric salts are: salicylates (formation of deep violet-blue color and precipitate of ferric salicylate); benzoates (flesh-colored precipitate of ferric benzoate); tannates (inky color and precipitate of ferric tannate); antipyrin (red color); the iodides and bromides (liberation of iodine and bromine); mucilage of acacia (gelatinous precipitate, unless well diluted); carbonates and bicarbonates (precipitation of ferric carbonate and oxide).

When prescribing quinine sulphate with tincture of iron, it is not necessary to order some acid, because the tincture of iron is itself sufficiently acid to dissolve the quinine. It is also well to remember that oil of wintergreen (and oil of sweet-birch) will give a deep violet color with ferric salts, because it is chemically methyl salicylate.

Mercurial Compounds.—Their incompatibles are: potassium and sodium hydrate, carbonate, and bicarbonate; ammonium hydroxide (ammonia-water) and carbonate; lime-water (precipitates as an oxide); hypophosphites (reduced to the metallic state). Besides, it is necessary to emphasize the incompatibility of mercurous iodide with potassium iodide and other iodides (the mercurous iodide decomposes into mercuric iodide and metallic mercury) and of mercuric compounds with alkaloids and borax.

Silver Nitrate.—The only real incompatibility of silver nitrate that occurs in practice is with sodium chloride and perhaps sodium bicarbonate. The reason physicians sometimes prescribe these substances together is because they know that the salts neutralize the caustic effects of the silver nitrate. As to organic substances, the *dictum* that they are all incompatible with silver nitrate needs revision. It is true that they reduce the nitrate to the state of an oxide, but is it always the astringent effect of the nitrate that we seek when we administer *argentum nitricum*? Do we not frequently want the constitutional effect of the silver? When we do desire the astringent effect on the intestinal canal, silver nitrate should be administered in keratin-coated pills, and the diluent should be an indifferent substance like kaolin.

Spirit of Nitrous Ether.—The two incompatibles of practical import that

the physician has to bear in mind are: antipyrin (a green color due to the formation of a nitroso compound) and iodides (the liberation of iodine). With the salicylates a brownish color is formed, which does not amount to much, and with the fluid extracts of *uva ursi* and *buchu* there is a slight effervescence.

Hydrogen Peroxide.—The incompatibles of this valuable therapeutic agent are: potassium permanganate, carbolic acid, chlorine-water, ferric chloride, iodides, ammonia-water, and potassa soda.

Acids and Salts.—The strong acids, as a rule, decompose the salts, but, contrary to the general impression, the incompatibility is not a very important one; very often we prescribe deliberately an acid and a salt (usually a carbonate or bicarbonate) in order to get a new salt in fresh condition. Thus we prescribe sodium bicarbonate and salicylic acid in order to get fresh sodium salicylate. Salicylates and benzoates, however, should never be prescribed with acids, because salicylic and benzoic acids are liberated, and, being but very slightly soluble in water, they float about in flakes or are precipitated to the bottom of the vessel.

Miscellaneous Points.—1. Ichthyol is insoluble in strong alcoholic media and incompatible with, because precipitated by, strong acids and iodides. 2. Iodine or tincture of iodine should not be prescribed with water or glycerin, unless some potassium iodide is ordered at the same time. 3. Hydrochloric acid, when added directly to potassium chlorate, liberates chlorine. This is sometimes done deliberately, when the physician wants a mixture containing free chlorine. 4. Menthol, thymol, chloral, and

camphor liquefy when rubbed together. While they may be prescribed in a liquid preparation, they are absolutely incompatible when ordered in powders or capsules. 5. Potassium permanganate is incompatible with most organic substances, and when prescribed internally should be prescribed with kaolin as the diluent, and petrolatum or wool-fat as the excipient. 6. Chlorine-water should be prescribed alone, because it combines very readily with other substances.

With these points in mind—and their acquisition certainly presents no great difficulty—the physician, we believe, will be able to make a practice of prescribing independent combinations without the fear of making blunders, serious or otherwise. Editorial (*Merck's Archives*, March, 1903).

LACERATIONS OF THE CERVIX: WHEN SHALL THEY BE REPAIRED?

The writer has undertaken his investigations to learn: first, if plastic repair was curative; second, if the cervix was relacerated in subsequent labors; third, if plastic repairs would guard against subsequent cancer of the cervix. He has followed his cases up most carefully for over two years, and thinks that in no instance has any of these cases been followed by cancer of the cervix; that a larger majority of the cases have been cured of their ailments; that a greater proportion of those which have not been cured were benefited a great deal, and that none was worse than before the operation. He thinks that the operation should be performed just as soon as the condition produces symptoms which give any trouble or discomfort. D. H. Craig (*Proceedings of the American Medical Association*; *Med. Record*, May 9, 1903).

MASTOID PROCESS, AUSCULTATION OF THE.

When the bell of the stethoscope is placed against the tip of the mastoid and the handle of a vibrating tuning-fork is held against the mastoid process some distance from the stethoscope, the sound-waves pass from the handle of the tuning-fork through the stethoscope to the ears of the examiner. Any change in the density of the mastoid modifies the intensity of the sound-waves passing through the bone. If the density of the bone is increased, either by osteosclerosis or by the pneumatic spaces being filled with pus or granulations, sound-waves are transmitted with greater density; while if the interior of the mastoid is broken down, leaving the outer wall only a thin shell of bone, the intensity of the sound-waves will be materially diminished. Hence, by comparing the results on the suspected side with the results on the opposite side or a normal mastoid, an estimate can be made as to whether the mastoid under consideration is diseased or normal. A. H. Andrews (*Transactions of the American Medical Association*, May, 1903).

MENTAL ACTIVITY AND THE CIRCULATION OF THE BLOOD, THE RELATION BETWEEN.

Physiological experiments have from time to time been made during recent years to determine the relationship between cerebral activity and such bodily conditions as the circulation and the blood-pressure, the line of research to which most attention has been given by investigators being the connection between the emotions and the bodily conditions or processes just alluded to. In the *Psychological Review* for March Dr. Frederick C. Bonser, of Illinois University, has published an account of a lengthy

and systematic series of experiments undertaken to determine the vasomotor, respiratory, and cardiac changes associated with agreeable and disagreeable sensations of elementary character, mainly produced by odors, with mental activity, and with states of mental fatigue. The observations were made with the aid of suitable apparatus on a number of students of the University of Illinois, twelve in number, and the tracings and records obtained included the rate and force of the heart-beats (sphygmometric tracings) and the continuous graphic representation of respiration and the curves of vasomotor changes shown by the plethysmograph. The results obtained in the various cases were highly constant and concordant. They tended to establish the fact that a definite relation existed between various forms of cerebral and mental activity, on the one hand, and cardiac, respiratory, and vasomotor changes, on the other. The conclusions reached may be summarized as follows:—

First, both emotional and intellectual activities were accompanied by changes in the heart-rate and blood-pressure in all individuals and by vasomotor changes in the peripheral vessels in most persons. In general, a frequent pulse accompanied vasodilation and a slow pulse was associated with vasoconstriction. Secondly, there was no constant correspondence between the vasomotor condition and agreeable or disagreeable sensations. In some subjects agreeable sensations were attended with vasoconstriction and in others with vasodilation; but why this should be the case could not be answered in the light of present knowledge. Thirdly, intellectual fatigue after prolonged brainwork was accompanied by a diminished vasomotor response to emotional states, and recovery to the normal

level of blood-pressure was much slower in states of mental fatigue than in conditions of mental freshness. Fourthly, moderately prolonged intellectual activity produced increase of blood-pressure, diminution of the pulse-waves in the sphygmometric record, and blunting of the dicrotic notch. In most subjects, after an hour's mental activity, the heart-rate was slightly retarded. Fifthly, in very prolonged intellectual application there was produced a condition of vasoconstriction with heightened blood-pressure which persisted for nearly an hour after work had ceased, after which slight vasodilation set in. Sixthly, the Traube-Hering undulations, which represented normal rhythmical periods of vasoconstriction and vasodilation, corresponded in condition of brain activity with fluctuations of sensorial acuity (auditory and visual perceptions), the greatest sensorial acuity being reached just after the maximum of vasoconstriction. Seventhly, the blood-supply of the brain during cerebral activity was regulated by the vasomotor center acting through the heart, the splanchnic circulation, and the peripheral systemic circulation, the mode of reaction being such that the circulation of blood through the brain was augmented in states of heightened mental activity. Editorial (*Lancet*, April 18, 1903).

NASAL DEFORMITIES, PARAFFIN IN.

The "saddleback" nose no longer presents a barrier that will not yield to our efforts, for with paraffin a large majority of the afflicted patients can be relieved of their disfigurement and their nasal breathing space greatly enlarged. In the author's early cases he struggled with all shapes and makes of syringes. The man that can inject paraffin subcutaneously with any ordinary hypodermic syringe is,

to his mind, a magician. He has had several syringes made, but the one he exhibited he found the most successful. It is of heavy metal, which prevents the paraffin from cooling too rapidly, and with a powerful thumbscrew, so that one can accurately judge the quantity injected. A short, thick needle, that will not cool quickly, completes the syringe. He has used paraffin with a melting-point of from 100° to 120° F., and found that paraffin with a melting-point between 110° and 112° F. is the most satisfactory. He has used paraffin in more than one hundred nasal cases. Advantages of using paraffin: local anæsthesia only is required, no scar, practically no pain, and very slight inflammation. The operation is completed in a few seconds, and the patient and operator see the result immediately. P. J. H. Farrell (Transactions of the American Medical Association, May, 1903.)

NERVOUS DISEASES, DRUGS USED IN.

The general conception of remedies for neurosis is based on the exploded pathological view that a neurosis is a disease of a specific character not underlain by a pathological change, and, hence, is erroneous. The nervous system is not a unity, but is made up of structures involving motion, sensation, as well as growth, whose action inhibits explosive performance of various functions. Each of the organs has its own nervous system subject to control by the cerebro-spinal system. Nerve-action means production of nerve-waste, and, hence, involves removal of toxic products. For this reason treatment of the neuroses involves, not merely the use of the so-called nervines, but also employment of eliminants, general tonics, dietetics, etc. The prevalent view has led to "habits" and to the abuse of hypnotics, analgesics,

sedatives, etc. The abuse of these is often due to the failure to recognize the necessity for elimination of the products of nerve-tire and nerve-strain. Even the so-called reflex neuroses generally arise from retention of waste produced by the constitutional effects of local irritation, and, hence, rarely vanish on removal of the local irritation unless constitutional treatment be adopted. G. F. Butler (Transactions of the American Medical Association, May, 1903).

OMENTUM, TRANSPLANTATION OF THE.

Transplantation of omentum over defects in the stomach is an established operation. Transplantation of omentum over intestinal defects is recommended, but is still in the developmental stage. Transplantation of omentum over defects in the cæcum is the most favorable portion of the intestinal tract. Transplantation of omentum over defects in the small intestine should only be done after fixation of the segment of intestine to the abdominal wall. Gauze drainage should be resorted to, excluding the general peritoneal cavity. E. J. Senn (Journal of the American Medical Association, April 18, 1903).

OVARIES, TRANSPLANTATION OF THE.

In two young women in whom the appendages had been removed two years previously, healthy ovarian tissue from another subject was transplanted into the broad ligament, with the idea of establishing new ovaries. On account of the destruction of the Fallopian tubes in each case, at the time the appendages were removed, an attempt in each case was made to reconstruct serviceable oviducts from the amputated tubes. A description of the operation, and subsequent histories of the case. F. H. Mar-

tin (Transactions of the American Medical Association, May, 1903).

PANCREAS, FUNCTIONS OF.

Formerly it was the custom to think that each organ subserved but one function. It is now known, however, that complexity of function is the rule rather than the exception in Nature, and the pancreas, for instance, has not only a fat-splitting ferment, a ferment for the digestion of carbohydrates, a proteid ferment, but has also an internal secretion more important than any of its intestinal digestive functions. A fistula of the pancreas produced by introducing a cannula into the duct does not set up any disturbance of the general nutrition of the animal experimented upon. Complete removal of the pancreas, however, caused first serious nutritional disturbance by interference with carbohydrate metabolism and then, soon afterward, death, because of severe diabetes. The pancreas is not merely a salivary gland out of place, as a distinguished physiologist once said, but it is one of the most important organs in the abdominal cavity.

One of the most important discoveries with regard to the pancreas made in recent years was the effect upon it of adrenalin. First, there came the observation that the use of extract of the adrenal gland might produce diabetes, then Herter's observation that this was probably due to an oxidizing effect of the adrenal extract upon the pancreatic cells. There is no doubt now that the pancreas is the most important organ as regards sugar metabolism. The liver, the kidneys, and the nervous system may each have important influence, but, when they are affected, Nature seems to be able to get along without any of them as far as the sugar metabolism of the system is con-

cerned; but, when the pancreas is seriously affected, then diabetes is inevitable. A very interesting discovery made recently is that substances are produced during stomach and intestinal digestion which, on absorption, are carried to the pancreas and excite its secretion. This renders still more complex the problem of pancreatic function. It has been thought that the pancreas provides glycolytic enzymes. These are, however, produced in many tissues, though the pancreas may be the most important source of them. There are physiologists who consider that the pancreas acts upon the liver, thus influencing the production of sugar and so producing the well-known effect with regard to diabetes. Medical knowledge on this subject, however, is as yet very vague. R. H. Chittenden (Proceedings of the Congress of American Physicians and Surgeons; Med. News, May 16, 1903).

PHARMACOLOGICAL ACTION AS DETERMINED BY CHEMICAL STRUCTURE OR BY PHYSICAL CHARACTERS.

The view is generally expressed that a close relation exists between the configuration of a molecule and its effects in the organism. The modern study of the borderland between chemistry and physics has suggested a doubt how far physiological effects are due to chemical combination between living substance and drugs, and how far they may be accounted for by the physical characters of drugs. In some instances the latter view is the more satisfactory. There is every evidence, furthermore, that some inorganic bodies differ in their effects, not through differences in their chemical affinities for living matter, but rather through the differences in their physical properties. Undue weight has hitherto been laid on the constitutional

structure of drugs, and that, while this may give important indications as to the effects of drugs, it seems probable that more direct inferences can be drawn from a knowledge of the physical characters. A. R. Cushny (Transactions of the American Medical Association, May, 1903).

PLEURISY AND PNEUMONIA, ABDOMINAL PAIN IN.

In acute inflammation of the pleura we not infrequently have abdominal pain. This is sought to be accounted for in various ways. One is that the lower six intercostal nerves supply not only the pleura, but the abdominal muscles; hence the pain could be readily referred to the abdomen. Again, the phrenic nerve may play some part in this peculiar condition. This referred pain may give rise to the diagnosis of appendicitis, cholecystitis, etc., whereas the real lesion is a pleurisy or a pneumonia. The writer gave the histories of several cases in which a mistake in diagnosis had been made in some of which appendicectomy had been done under a misapprehension. In children it appears not necessary that the lower lobes of the lung be affected to cause this referred pain, as it may occur when the pneumonia is apical. J. B. Herrick (Proceedings of the American Medical Association; Amer. Med., May 16, 1903).

PNEUMONIA, CATARRHAL, MANAGEMENT OF, IN INFANTS AND YOUNG CHILDREN.

Study of means other than the internal use of drugs based on over 600 cases. Very few cases are primary, while the most serious of the causes of secondary pneumonia are diphtheria and measles. As the disease has no limit, runs no cycle, the preservation of vital resistance, by

not upsetting the stomach and disturbing the child, is of great value. Little irritability, restlessness or loss of sleep should be permitted. Good ventilation of the sickroom is essential, the temperature of the room should never pass 70° F., and a flannel undershirt alone is advised. He never used a cotton jacket. The child is kept in his crib, water is given between nursing, and the time of nursing is decreased, while the food is diluted. The bowels must be moved once a day. The child should not be needlessly disturbed, food and medicine being given at three-hour intervals. Steam inhalation with creosote (10 drops to 1 quart of water) under a croup tent, for thirty minutes every three hours, advised, admitting fresh air every ten minutes. With much catarrh he used turpentine ($\frac{1}{3}$) with oil ($\frac{2}{3}$), but mustard applications make the best counterirritation. The boundaries to be covered should be marked out, and the plaster is to be made with 1 part of mustard to 2 parts of flour, applied for ten to fifteen minutes once in six to eight hours. Later applications should be weaker. They are especially effective at the onset, as are mustard-baths, especially in cases with marked prostration. Drugs internally are only indicated symptomatically, and great care is necessary not to disturb digestion. Expectorants are best given in powdered or tablet form, dissolved in water, after feeding. The ammonium salts are only given during resolution, in $\frac{1}{2}$ -grain doses, and antipyretics are used only when the baths are badly borne. If there is much restlessness, Dover's powder may be given, watching its effect on the bowels. Heart-stimulants are, as a rule, used far too early, but are needed when the pulse becomes soft, rapid, and irregular, such as 150 during sleep. He considers tincture of strophanthus best, but strychn-

nine is also good when pushed to full doses or till some result is noted. Digitalis upsets the stomach easily; whisky or brandy is rarely needed, and is best employed late, when other stimulants fail. Nitroglycerin may be used, but frequently causes headache. A daily sponge-bath is advised, and, when the fever reaches 104° F., a sponge or a cold pack is to be given. For the sponging, salt (5j to a quart of water) or alcohol (1 part to 4 of water) is used. This is done under a blanket, the water being gradually reduced to 80° F., continued from ten to fifteen minutes. Too frequent sponging tires the patient. Cold tub-baths have a very slight and temporary effect on this condition. He considers the cold pack the best hydrotherapeutic measure, given by using a large bath-towel, the entire body being covered to the knees. Warm water is first used, decreased gradually by sponging. The temperature is taken in a half-hour. Children may be turned from side to side and enjoy the cool pack. An icebag is applied to the head and hot waterbags to the feet. Oxygen, given for one-half minute every half-hour, is also of value. (C. G. Kerley.)

Dr. Wahrer, of Fort Madison, Iowa, mentioned the fact that many children are literally smothered to death by the treatment of pneumonia, and referred to several cases. Dr. Williams, of Chicago, laid special stress on the conservation of the child's vital resistance. Dr. Gilbert, of Louisville, uses ammonium bromide, but objects to any opiate, even Dover's powder. Dr. Tuley, of Louisville, said that the term capillary bronchitis should be discarded, as all such cases are pneumonia. Poultices, internal antipyretics, and nauseating remedies are all useless. Dr. Parke, of Birmingham, Ala., referred to several cases of asthma diagnosed

broncho-pneumonia. He gives strychnine by rectal injection. Dr. Barbour, of Louisville, insisted that drugs are always needed in the treatment of pneumonia. He advised the cotton jacket. Dr. Kerley, in closing, said that Dover's powder is the least dangerous sedative. Chloral should never be given, because it upsets the stomach. He believes in drugs properly used,—but only when properly used. (Proceedings of the American Medical Association; Phila. Med. Jour., May 16, 1903).

PROLAPSED KIDNEY, FIXATION OF.

Fixation of the prolapsed kidney is absolutely a surgical procedure. Belts and corsets were inadequate if the kidney has descended below the border of the ribs. When the colon became distended it dragged the kidney down. Belts were good before this descent had taken place, but afterward they might irritate the prolapsed kidney. The indications for operation were, first of all, when the kidney should have descended below the border of the ribs, and in which the patient was nervous or hysterical. He described a new operation whereby the kidney could be drawn up under the border of the ribs and held there until adhesion had taken place. In a great many of the cases he used gauze for drainage, but did not think that this was absolutely essential for the cure of the disease. A. H. Goelet (Proceedings of the American Medical Association; Med. Record, May 9, 1903).

RHEUMATIC AFFECTIONS, TREATMENT OF.

The hypodermic injection of tropacocaine, in the form of a Schleich infiltration, accomplishes therapeutic results not approached by any other method in the

relief of the agony of neuralgias and myalgias of rheumatic origin. The injection should be made in the area of greatest tenderness to pressure, and varies slightly in technique from that practiced for surgical purposes, inasmuch as it demands the injection of as large quantities of the fluid as possible, with a syringe capable of exerting powerful pressure. The method is successful in acute, sub-acute, and chronic cases in which fibroid changes have not already taken place; furthermore, it offers a sign of diagnostic importance, since it offers relief only in the neuralgias of rheumatic origin. In rheumatic affections of tendons and joints it is available only in very light cases, with small amounts of exudation. R. Bloch (Proceedings of the International Medical Congress; Med. News, May 23, 1903).

SALT SOLUTION, USE OF NORMAL.

Salt solution is employed by the writer in all diseased conditions associated with either hæmorrhage or intense toxæmia. In hæmorrhage it replaces the fluid lost to the tissues and refills the blood-vessels, thereby giving the heart something on which to work. It stimulates the cardiac ganglia; sustains the nutrition of the heart itself, rendering it possible for the remaining blood to be propelled to the vital centers; and sustains life temporarily until new blood can be formed. It raises the temperature to normal and relieves collapse. In toxic conditions it excites diaphoresis and diuresis, lowers the specific gravity of the urine, increases phagocytosis, dilutes the poisons circulating in the bloodstream, and by a process of cell-lavage removes the toxin from the paralyzed cell, allowing it to resume its normal function. H. F. Thompson (Medical News, April 25, 1903).

SCLEREMA NEONATORUM.

The subjects of this disease are usually found among the premature, weakened, and poorly developed infants of the foundling asylums. Whether or not hereditary syphilis plays a rôle in the etiology is still a disputed point. The affection does not, as a rule, develop immediately after birth, but the symptoms are first noticed within the following seven to ten days, although, according to Hennig, they may be delayed as late as the seventh month. E. R. Stillman (Journal of the American Medical Association, April 25, 1903).

SKULL FRACTURES, NECESSITY FOR MORE CARE IN THE TREATMENT OF.

Fractures of the skull are not always recognized as such until too late. When not properly treated at or about the time of fracture, they frequently result in death, and, if not in death, in serious remote consequences. When properly treated they usually terminate satisfactorily. With ordinary care and cleanliness, fractures of the skull may be successfully treated by the average surgeon, and under ordinary conditions. The duty of every surgeon treating such fractures is to know that he has done all possible for his patient. W. H. Earles (Transactions of the American Medical Association, May, 1903).

STOMACH, SURGERY OF.

With wider experience surgeons in general are impressed with the importance of surgical intervention in an increasing number of cases. The diagnosis in these cases is often difficult without exploratory operation. Our operative technique has been so much perfected of late that such exploratory operations entail little danger, and their value is established when so many permanent cures

can be obtained. The writer compared the palliative operations of gastro-enterostomy, etc., to the interval operation in appendicitis. If such an interval operation is performed in cases of gastric ulcer more radical operation for gastric carcinoma is frequently unnecessary. In gastro-enterostomy if the opening be made in the lowest part of the stomach, as suggested by Mayo, pernicious vomiting is prevented. It is a matter of indifference whether a mechanical means or suture is employed in the operation. The writer has made use of McGraw's elastic ligature method in nine cases with favorable results. In performing gastro-enterostomy it is better to close the pylorus if it is still open. Otherwise the gastro-enterostomy opening is likely to contract. The operations for enlarging the pylorus have been very unsuccessful. Finney's pyloroplastic operation promises well, but its value is not yet entirely established. This operation used in 1 case with a good result. Shortening the gastro-hepatic ligament to aid in drainage of the stomach has not given him good results. Complicated operations in the treatment of carcinoma are never necessary. In cases of benign stenosis gastro-enterostomy gives the most favorable results if just enough stomach-tissue is included in the stitches, and if the anastomosis is made at the lowest point of the stomach and without tension. The writer has performed 79 operations on the stomach, including 9 pylorotomies, with 3 deaths. In 1 case death was accidental, and not the result of the operation. In the second case the patient was in a weakened condition and gastro-enterostomy would have been preferable. In the third case death was due to loosening of the Murphy button. As a preparation for operation gastric lavage advised. After the operation the patient

should be fed by the rectum for two weeks. Patients suffering from non-malignant affections are greatly benefited by operation in every case. (A. J. Ochsner.)

Discussion.—Andrews, of Chicago, believes that practically all the cases of disturbance of gastric digestion belong to the surgeon. Most of them are the immediate or remote results of gastric ulcer. There is no more reason why gastric ulcers should not be treated surgically than an ulcer of the leg or any other part of the body. The presence of gastric ulcer indicates operation in every case. Operation is also indicated in cases of chronic indigestion. The anæmic, hysterical dyspeptics are nearly all cured by efficient drainage of the stomach. Gastric disturbances are usually not a series of disorders, but a number of different stages of gastric ulcer. He agrees with Niles that most of the cases of carcinoma have their origin in an ulcer of the stomach. Other conditions are caused by adhesions or inflammatory thickening from ulcer.

Mayo, of Rochester, Minn., believes that most of the cases of gastric trouble arise from gastric ulcer and its complications. The ulcer is most commonly situated in the region of the pylorus, and is frequently so small that it is impossible to find it. Hence operations on the ulcer itself are impossible, and the rational procedure is to drain the stomach at its lowest point. In carcinoma of the stomach the glands which are affected are situated in the gastro-hepatic omentum, and hence in these cases all of the lesser curvature and the omentum should be removed.

Rodman, of Philadelphia, believes that the time will soon come when all gastric ulcers will be treated surgically before complications arise. The greater num-

ber of carcinomas of the stomach arise in ulcers of the stomach. In operating Rodman prefers von Hacker's method of posterior gastro-enterostomy, but believes whatever method is used pernicious vomiting sometimes follows.

Cordier, of Kansas City, Mo., says the pathological condition in these cases frequently precludes excision of the gastric ulcer, and gastro-enterostomy is the operation of choice. The quickest operation possible should be performed in these cases. He prefers to use the Murphy button and the anterior operation. The photograph of specimen was exhibited in which gastro-enterostomy had been performed seven years previously, the patient dying from pneumonia.

Niles called attention to the fact that gastro-enterostomy is helpful in treating all cases of gastric ulcer,—both those which are evident at the time of operation and those so small that they cannot be seen. Excision is impossible in these cases. (Proceedings of the American Medical Association; Amer. Med., May 16, 1903.)

STRABISMUS, DEVELOPMENT OF THE FUSION CENTER IN THE TREATMENT OF.

The writer designates the fusion center as the dominant center of the visual apparatus, and from it must emanate all the impulses to the various subsidiary centers for all changes in the accommodation, position of the visual axes, and positions of the head and body that are required to bring corresponding retinal points into focus. Any disturbance or condition of nondevelopment of this center is the cause of those heterophorias or heterotropias not due to abnormalities in the anatomical relations of the orbit and extrinsic muscles or their paralyses. The various causes of the nondevelopment of

the fusion center and the method of developing its function with the amblyoscope during the existence of the strabismus are studied. If the treatment does not result in parallelism of the visual axes and operation has to be resorted to, the fusion center, being in a developed condition, can proceed with its function as soon as the visual axes are made parallel. N. M. Black (Transactions of the American Medical Association, May, 1903).

SYPHILIS AND MERCURY, BLOOD-CHANGES DUE TO.

An extensive series of observations with especial reference to their diagnostic value has been made on the hæmoglobin contents of the blood of syphilis by the author. Over five hundred cases of all varieties are included, treated and untreated. It was found that untreated cases of syphilis show a diminution of hæmoglobin, which lasts a longer or shorter time, depending on the severity of the disease. A gradual increase then takes place as the signs of syphilis subside. If a therapeutic dose of mercury is introduced into the affected organism by injection or inunction, a relatively sudden decrease of the hæmoglobin content is observed (10 to 20 degrees in Gowers's or Fleischl's hæmoglobinometer). This sinking may again be compensated for in the course of a few days, depending on the severity of the symptoms and the general condition of the patient. If the treatment is continued the hæmoglobin may reach a higher point than before the former was inaugurated, and the point when no further decrease takes place marks the period when healing of the specific lesions begins. It is further claimed that the changes in hæmoglobin values just noted are only to be found in the blood

of florid syphilitic patients and have not been observed in health or in any other disease. The reaction can be also found when invasion of distinct lymph-glands takes place and in all varieties of the disease. It disappears when the syphilitic lesions disappear, but can again be demonstrated if any recurrence takes place. In using the test for diagnostic purposes care must be taken to employ the proper dose of mercury, at least 3 grams of the official blue ointment for adults, by inunction. Administration by mouth is not effective, because of the gradual absorption. Observations should be made the morning after the inunction. Subcutaneous injection of mercury bichloride (0.05 gram) should be followed by observation eight to nine hours later. The author prefers the Gowers hæmoglobinometer modified by Sahli. A diminution of 5 degrees or more in the latter instrument indicates the presence of a florid syphilis. In secondary and tertiary syphilis the same result obtains, provided the specific lesions have not undergone involution. A negative result is not, therefore, diagnostic of the absence of the disease (at some previous time). The author finds, from a study of all cases where the test was properly applied, a positive result in from 70 to 80 per cent. of all doubtful cases. J. Justus (*Deutsches Archiv f. klin. Med.*, vol. lxxv, No. 1; *Medical News*, April 4, 1903).

SYPHILIS, THE TREATMENT OF.

The writer divides the remedial procedures into (1) the secondary incubation or pre-eruptive period; (2) the eruptive stage, including the first six or seven months; (3) from the sixth or seventh month to the end of the third year,—the late secondary stage; (4) the tertiary stage. The administration of

mercury cannot be begun too early, and when the round cells, caused by the syphilitic virus, are still young and more easily acted upon, iodide of potassium is administered for the elimination of the degenerated round cells and the toxins of syphilis. The mercury is given in $\frac{1}{8}$ - to $\frac{1}{4}$ -grain doses, three times daily, while an inunction of 50-per-cent. strength should be rubbed into every portion of the body, especially between the fingers and toes, as well as on the palms and soles. W. D. Trenwith (*Medical News*, April 25, 1903).

THERAPEUTICS, PRINCIPLES OF.

Therapeutics has a number of definite principles, under each of which many facts may be grouped. Discoveries of error among the subordinate data do not invalidate the principles. Medicine must be studied as a department of biology; biology as a department of cosmology; cosmology seeks to establish not merely facts, but general laws governing the action and interaction of matter and energy, while its special departments treat of the special manifestations of universal energy and their special laws. It is needful to attain as definite a knowledge as possible of the physical and chemical processes of life, normal and abnormal, for thus only can we learn to preserve the one and to remedy the other; also the means at our command are largely physical and chemical, and must therefore be studied both from the viewpoint of physics and chemistry and from that of their effect upon life-processes. The functions of therapeutics is to preserve and restore health and to prevent and remedy disease. It must be remembered that these are both vital phenomena, and the transition from one to the other is a vital process. Hence recovery is not something brought about by

drugs or other agents, but a vital process due to the essential powers of living matter. It is not in mere chemical composition or in physical structure that dead cells and organisms differ from live ones, but in vital activity and the plasticity and mobility that this imposes upon structure and chemical constitution. It has an autogenous tendency to maintain this activity against the environment, by inhibition or modification of the ordinary chemical and physical reactions and the substitution of vital defensive reactions. The least highly vitalized portions of the body, as the bones, are the most susceptible to mechanical violence, but even broken living bones and broken living twigs will try to restore their continuity, as dead bones and dead twigs will not and cannot. Mr. Spencer defines life as a continual adjustment of internal relations and external relations. This is shown as well in the production of antitoxin and bacteriolysins in infected animals and in the development of antilysins by the infecting microbes. Unusual vital phenomena are not necessarily to be interfered with; their tendency may be salutary rather than morbid; they may be part of the defensive reaction by which life is preserved. The therapist must know whether febrile heat tends to the prolongation or to the curtailment of life in a given case before he decides whether or not he will attempt to reduce it. He must also know what other effects will follow from its reduction, and what additional effects, desirable or otherwise, will result from each of the various measures by which it may be reduced. Under all circumstances, however, it must be kept in mind that neither morbid agents nor remedial measures add anything to the powers possessed by the body. They alter, they evoke, the natural actions and reactions,—the vital processes of disease

and recovery; but it is the living body that determines the nature of the disease process,—it is the living body that determines the nature of the process of recovery; and our therapeutic measures must be guided by the natural vital defensive processes, to evoke, to stimulate, to assist; never to oppose, never to risk interference. S. Solis-Cohen (*Proceedings of the American Medical Association*; Amer. Med., May 16, 1903).

THYMUS GLAND, ACUTE SUPPURATIVE INFLAMMATION OF THE.

The writer relates a case of suppuration of the thymus gland which is noteworthy on account of its rarity. The normal thymus does not suppurate except under unusual conditions, but when this gland is the seat of degenerative changes it may suppurate. The causes and character of these suppurative inflammations are still obscure, though Kocher and others have thrown a good deal of light on the subject. Inflammations of the thymus should be divided into two classes: metastatic forms, transmitted from suppurative areas elsewhere; and primary forms. Kocher contends that every suppuration of the thymus (*strumitis*) is secondary, as is shown by the finding of colon bacilli in the pus of some of these cases. There are, however, certainly cases on record in which there was no lesion of any kind in any part of the body, and yet *strumitis* developed. The infectious character of *strumitis* has been confirmed since Kocher by the finding of the pneumococcus (Wöhlfler, Demme) the typhoid bacillus (Tavel), the streptococcus and staphylococcus (Tavel) in the pus in these cases. There have been some instances, however, in which no germ could be found in this pus. In the primary cases the bacteriological data have been

thus far very scanty. The staphylococcus pyogenes aureus has been found in some of these cases. These germs reach the thymus unquestionably through the blood and lymph. Clinically strumitis runs an acute course; is accompanied by fever, is a rapidly growing tumor, and hot to the touch at times. The swelling in the neck may not be very marked; the skin is red and inflamed if the supuration is superficial. There is difficulty of respiration, even asphyxia, enlargement of the veins of the neck, a peculiar timbre to the voice, the head is thrown backward, and there is difficulty in respiration. In the case here reported the abscess developed quickly, and the patient refused operation until she was almost asphyxiated. She was in a state of syncope, and had ceased to breathe when the tumor was incised and a lot of pus welled out suddenly. She recovered consciousness after about a minute, and the wound was tamponed on account of profuse hæmorrhage. It healed by granulation and the patient was discharged cured in twenty days. Abrazhanoff (*Chirurgia*, Feb., 1903; *N. Y. Med. Jour.*, April 25, 1903).

TONSILS, TUBERCULOSIS OF.

The tonsils, as the seat of tuberculosis, are frequent in the literature. The cases divide themselves into those observed clinically and those in which post-mortem examinations have been made. The primary isolated tuberculosis of the tonsil is rare; the secondary forms, especially occurring with pulmonary phthisis, are quite a common form of the disease. The cervical lymphnodes enlarge in tonsillar tuberculosis of both varieties. Isolated forms of tuberculosis of the lymphnodes are especially common and interesting as occurring in children. The secondary enlargement is of interest

as complicating tuberculosis elsewhere. Children furnish the largest quota of cases of tuberculosis of the tonsils; the cause of this is to be found in the evident greater activity and growth of lymph-tissue in these subjects. The tonsils are the portals of infection throughout the economy. It was at first thought that these nodes were infected from below through the bronchial nodes; this was denied, though it may exceptionally occur. As a rule, the tubercle bacillus enters the tonsils and infects the nodes from above. The cases of Friedman illustrate this. Tuberculous peritonitis often begins in tonsillar tuberculosis, with tuberculosis of the lymphnodes. The manner of infection is by the ingestion of infected food or sputum, for the most part. The so-called Fütterungstuberculosis of the Germans is much more common than has been thought, as cases cited show very distinctly. A clear case of generalized tuberculosis is especially demonstrative of this. Henry Koplik (*Proceedings of the Association of American Physicians*; *Med. News*, May 16, 1903).

TUBERCULAR PERITONITIS, TOILET OF THE PERITONEUM IN.

Surgery has been altogether too aggressive in the treatment of the ascitic forms of this disease. Until it became fashionable a few years ago to attempt to remove the infected area, all these cases went on to recoveries. After this advanced technique was introduced all of them went on to death. The writer, therefore, urged with much emphasis a return to the ancient, but honorable, technique of simple incision and drainage without manipulation or laceration of the infected area. A. J. Ochsner (*Proceedings of the American Surgical Association*; *Med. News*, May 16, 1903).

TUBERCULOSIS, ARTIFICIAL IMMUNITY IN EXPERIMENTAL.

Tuberculous toxins do produce some immunity to their own action, but this does not last, nor does it protect against future invasions of the disease by living tubercle bacilli. When such susceptible animals as rabbits, however, were inoculated first with attenuated cultures until there is no reaction to tuberculin and then with virulent cultures of tubercle bacilli, a state was induced in which the animal acquired a resisting power against tuberculosis. Though the disease developed after the inoculation, the animal tissues were able after a time to bring about a resolution of the lesions, and true cure followed. Where actual cure did not take place a prolongation of life at least three times that of control animals was obtained. The writer showed the specimens of lungs of rabbits, exhibiting the marked tendency to complete resolution in experimentally immunized animals. He concludes, therefore, that the evidence tends to show that the attainment of a certain degree of toxin immunity does not protect against reinfection, and that whatever degree of immunity has been obtained experimentally is due rather to a bacteriolytic, or what Behring refers to as isopathic, immunity. A living germ seems necessary to the production of whatever degree of immunity has already been attained experimentally. E. L. Trudeau (Proceedings of the Association of American Physicians; Med. News, May 16, 1903).

TUBERCULOSIS, BOVINE, OF HUMAN BEINGS.

Two personal cases of mesenteric gland tuberculosis. One proved by bacteriological tests to be drawn from bovine bacilli, the other from the bacilli of human tuberculosis. In these cases the

infection was evidently from the intestinal tract, and the one positive case shows the liability to human infection by bovine tubercle bacilli. A cow was inoculated with cultures from the two cases. The bovine bacillus grew well in the animal's tissues. The human bacillus failed to grow. There was some slowness of growth on the part of the bovine bacillus,—evidently due to attenuation of virulence in human tissues. Two almost similar cases of mesenteric tuberculosis proved to give cultures of bacilli of the human type; so that out of four cases only one seemed due to infection from tuberculous meat or milk. There is no macroscopical difference between the lesions due to the bovine and the human bacilli. In the caseating glands in which the bovine bacilli were found there were large numbers of bacilli, while very few in those due to a human infection. Dr. Ravenel, of Philadelphia, has reported a case of human mesenteric gland infection also due to bovine bacilli. Theobald Smith (Proceedings of the Association of American Physicians; Med. News, May 16, 1903).

TUBERCULOSIS, CINNAMATE OF SODA IN.

All the forms of medical treatment hitherto employed in the cure of tuberculosis have, by general consent, been discarded. The last vaunted method, that of Landerer, has given him good results in 20 per cent. of the cases of a very mild type. He has, however, discovered a modification of the method, which enabled him to achieve a cure in 8 per cent. of the cases of advanced tuberculosis with cavity formation. He used Landerer's solution of 4 of cinnamate of soda to 100 of water, but employs the solution hypodermically instead of intravenously. He can thus give doses of ten to twenty times the amount without ill effect. He begins

with 3 cubic centimeters and increases up to 20 cubic centimeters daily, which represents the normal dose. He has, however, given 70 cubic centimeters in bad cases without ill effect. The improvement in the symptoms is prompt, and affects first the fever and the marasmus and then the cough. At the end of three months the bacilli have generally disappeared from the sputum. They may persist, however, as long as five or six months. All of the cases which resulted fatally in spite of this treatment presented previous involvement of the gastro-intestinal tract, amyloid, etc., and died, not of tuberculosis, but of marasmus. A. S. Herrera (International Medical Congress; Med. News, May 23, 1903).

TYPHOID FEVER, PROPHYLAXIS OF.

The typhoid bacillus is the cause of typhoid fever, the blood containing specific substances. Reception is within the alimentary tract only; injected beneath the skin the bacillus will never produce typhoid fever. There is no positive or experimental proof otherwise. The alimentary canal is the place in which the bacilli live. Fæces and urine contain the bacillus; it appears in the urine during convalescence and after the patient is discharged. The drinking-water is a cause; the water-supply must be looked into. The patient must be predisposed to it. Most cases appear between the ages of fifteen and twenty-five years; it occurs in childhood and in old age also. Exposure to very bad hygienic conditions is a predisposing cause. The main source of infection is the patient. Prevent patients from disseminating the germ, by disinfection of urine and fæces. Direct contagion occurs frequently from direct transmission by infected articles and utensils. The common fly is a transmit-

ter. The disease exists in tenement-houses, and is brought on by overcrowding in lodgings, etc. The bacillus may be distributed in a variety of ways; drinking-water is a prime source. Water-mains may be infected with bacilli by the joints being loose and the bacilli sucked in. The conditions are horrible in this country, where the amount of contamination is very great. The soil is a great source of infection, as the excretions are transmitted in the soil. Foods are also a great cause, such as celery and other raw foods. Infection may occur through the air. Milk is also a transmitter, since the cans are washed with water, milk being an excellent medium for the growth of the bacilli. A milk epidemic in Maryland was cited. Oysters may be a possible source of origin,—a more dangerous one. The Atlantic City epidemic is a conclusive example, the oysters becoming infected after a break in the sewer. The Chesapeake Bay oysters are above suspicion. To conclude, the ultimate source is always the typhoid-fever patient. W. H. Welch (Proceedings of the American Medical Association; Phila. Med. Jour., May 16, 1903).

Knowledge of the natural history includes all facts essential to successful prophylaxis, yet the prophylaxis is a failure, for typhoid is the commonest of continued fevers. Failure in great part is explained by three considerations:—

First.—Typhoid fever in most instances is not recognized: (*a*) of ambulant and mild cases, a great majority; (*b*) of cases at the extremes of life, a majority; (*c*) of anomalous cases, a majority; (*d*) of plain, uncomplicated, bed-ridden cases, 40 per cent. This defect, shared by physicians in all parts of the country, nearly 50 per cent. of observed cases, is chargeable primarily to (*e*) a

serious default of education; (*f*) delusion that malaria is a considerable cause of mortality.

Second.—The view that typhoid fever is distinctly a disease of large communities is erroneous. Typhoid mortality increases with diminishing populations. Rural mortality is nearly three times that of largest cities. Typhoid fever distinctly a rural disease. Illustrations from census reports.

Third.—The general prophylaxis in large cities, though measurably effective in the defense of cities, cannot, by its widest conceivable extension, have a marked effect on the total typhoid mortality of the country, for municipal prophylaxis is concerned only with the least part, and is not in immediate relation with this least part of the general morbidity from typhoid fever. The largest prime factor in dissemination is its occurrence in rural districts, where the disposal of human excreta admits of distribution by wind, water, animals, and insects. Special hygiene is essentially a defense against excremental contamination, including general care of water and food, screening of privies, destruction of flies and other insects, and their exclusion from dwellings, etc. The isolation of typhoid-fever cases. Disinfection includes particular care of the sick and his belongings, of hands of attendants, and of excreta as soon as passed. Need of a rapid, simple, and cheap method of disinfecting faeces. John S. Fulton (Transactions of the American Medical Association, May, 1903).

TYPHOID FEVER, TREATMENT OF.

Review of ninety cases of typhoid fever with four deaths, with special reference to therapeutic fasting. The following conclusions were offered: Fasting and a restricted diet are indicated because of

pathological conditions. A clinical fact maintained is that emaciation occurred independently of the amount of food taken. All severe cases should be subjected to fasting for twenty-four to forty-eight hours, to relieve the active symptoms, which exhaust the patient more rapidly than the lack of food. After a fast there should be prescribed a restricted diet of broths, diluted milk, etc., in definite quantities. Gelatin prevents too rapid emaciation in certain cases and renders hæmorrhage less liable. The cold bath or the modified cold bath is more effective during a fast. Peristalsis favors the absorption of toxins, and cathartics should be used only to remove undigested food. The presence of intestinal ulcers should be assumed to exist in every case, and the proper treatment is rest; this is best attained by fasting and a restricted diet, thus preventing hæmorrhage and perforation. The presence of diarrhœa and vomiting indicates the adoption of the fasting treatment. Fasting and a restricted diet shortens the course of the disease, and many cases run an abortive course after the amphibolic period. Many of the vaunted cures from specific drugs are in reality dietetic. Recrudescences are nearly always due to dietetic errors. R. M. Harbin (Proceedings of the American Medical Association; Boston Med. and Surg. Jour., May 14, 1903).

VARIOLA, THE GERM OF.

The first serious investigation in the etiology of small-pox which seems at the present time to have special value was that made by Weigert in 1873. Weigert noted the inclusion of certain bodies in epithelial cells, and made a study of them which is entirely objective, and not interpretative. A little later Raymond saw the same appearances and declared that

they were due to organisms. Guarnieri, in Italy, studied the details of these cell-inclusions and made it clear that they were no chance appearances nor due to optical delusions. These views had many opponents, especially in Germany and France, and it was not until Barsilewski, in Russia, gave a more definite description of these bodies that much light was thrown on the subject. The Russian investigator showed that they were not hyaline masses due to degenerative processes within the cells, but that they had a certain reticulated or network structure and that the appearances were specific to vaccinia and to the lesions of small-pox. Barsilewski was able to make eye-to-eye inoculation of material from these lesions, producing lesions of the same kind with the same epithelial inclusions.

The only conclusion that could be drawn from the Russian observations was that these appearances were due to a parasite. The school of the Pasteur Institute, however, insisted that these bodies were only due to the fragmentation of leucocytes. Practically none of the French observers with a microscope was ready to admit the organismal nature of these inclusions. A number of observations were made in England, however, tending to confirm the idea of the parasitic nature of these inclusions, and observations of the same tenor were made in America.

Vaccinia may be transmitted to certain animals, and produces specific appearances in the rabbit and in the cat. The cornea of the rabbit is used for experimental observations, because of its simplicity of structure and a perfect fixation of tissues can be readily obtained. When the cornea is inoculated in the cells a vacuole is found, in the midst of which is a body that takes stains rather freely and contains some chromatin. Careful

examination of the body thus observed shows that its protoplasm, when the body has attained a certain size, has a reticulated structure. After a time the chromatin within the body takes on a branch tendency and is evidently on the point of division. Further stages of the parasite show the divided nucleus, and then a little later a number of nuclei, each surrounded by a small portion of protoplasm. These nuclei then, as separate bodies, are found in vacuoles for themselves in neighboring cells or in the original cell. These appearances are rather easy to find in vaccinia.

In the deep epithelium of small-pox lesions, in early stages of the eruption, small inclusions are found which are never of the same structure, but are evidently similar. The appearance presented is not as satisfactory as in experimental vaccinia on the cornea for technical reasons. In the small-pox issues, however, the metamorphosis of the parasite can be traced up to the stage of segmentation quite as in the case of vaccinia. The bodies observed passed through the same cycle. In small-pox another organism seems to appear as if somehow in vaccinia the organism in question did not accomplish its full cycle of existence. This differing organism can be seen in the nuclei of epithelial cells. It consists at first of small circles surrounding material that stains very faintly. There are faint appearances of chromatin. Gradually the rim of the circle increases in size. Then globular bodies appear in the midst of the rim. These become more complex in structure and have the appearance of vesicles. They stain well with iron hæmatoxylin. They contain chromatin, but the chromatin is only brought out by long standing. At first the large central mass of the ring is pale and structureless, its

outer edge surrounded by similar bodies with points of chromatin.

This more or less circular organism with vesicular appearances seems to be the parasite of small-pox in the sporulation stage. Whether these spores later become the sickle-shaped bodies that are so characteristic as one stage of the coccidium the author does not know, and it has been impossible to trace the organism thus far even in vaccinia. Yet the connection between the bodies seen in vaccinia and in small-pox seems to be complete. In showing the specimens of the parasite in small-pox issues the author called attention to the fact that, as a rule, these issues were almost entirely without leucocytes; hence it does not seem probable that the appearances observed are due to degenerate leucocytes as is sometimes termed. The characteristic bodies can be seen with very low power, and their inclusion within the cells is manifest. The appearance of fragmentic nuclei is very different from these appearances, and would at once be recognized by anyone experienced in microscopical technique of tissue examination.

The author then showed the elongate body occupying a space within the cell and showing more and more structure as the body became enlarged. Certain more or less dumbbell appearances suggest the amœboid form, and chromatin points can be recognized here and there in the structure. In the oldest parts of the vesicular lesions of small-pox the parasite may be discovered in its nuclear invasion in what seems to be the sexual stage. At this time the cells surrounding it are greatly injured, showing that the process is advanced. This intranuclear parasitism does not take place in vaccinia, but seems to be the sexual stage which does not occur in the milder or animal form

of small-pox. Certain appearances give almost a double ring and occupy a position within the nucleus usually at a time when nearly all the true nuclear appearances are gone. This seems to be the female, or macrogamete form of the parasite. A corresponding appearance, but occupying a position always outside of the nucleus and with certain characteristic differences, notably of smaller size, seems to be the microgamete, or male element.

The author feels assured that these appearances can be traced with sufficient distinctness to make it clear that they contain a definite, developing structure whose evolution can be followed step by step and whose appearances indicate the progressive cycles of development of a parasite, which is evidently the etiological element in small-pox. Some of these conclusions have been confirmed by observations upon apes, and there seems no doubt that this line of investigation will give interesting and important results. W. T. Councilman (Proceedings of the American Association of Pathologists and Bacteriologists; Med. News, May 16, 1903).

VASCULAR TUMORS, TREATMENT OF, BY THE INJECTION OF BOILING WATER INTO THEM.

These tumors are classified anatomically into arterial, venous, and capillary. The theory of this method is to coagulate the blood in the vascular neoplasms by injecting some substance causing this into the vessels supplying the part. He tried paraffin first, but later gave it up in favor of boiling water. This causes coagulation and arrest of circulation in the part, with ultimate disappearance of the neoplasm by granular metamorphosis with absorption. He exhibited his ap-

paratus for injecting water, and reported cases in which he had tried it. The remedy had already been used for hæmorrhoids and fistulæ, and he intends to try it in tubercular adenitis and in gonorrhœal buboes, believing it will destroy the germs present. J. A. Wyeth (Proceedings of the American Medical Association; Philadelphia Medical Journal, May 16, 1903).

VENEREAL PERIL, AND BOYS.

The injury to the public from venereal diseases exceeds that done by all other ailments combined. This is principally due to the ignorance that prevails everywhere. In consequence, those infected neglect themselves or subject themselves to the maltreatment of advertising quacks and nostrum venders. The education which laymen receive on venereal diseases is in the physician's office, after the damage is done. It has been advocated that public lectures be given. But the auditors cannot be in equal states of receptivity. The lecturer cannot grade his instruction so that it will appeal to all. The proper time to impart information most likely to cause men to avoid venereal infection is at puberty. Mental and physical puberty do not always coincide. The author submits information to give boys when they are most likely to incur the risks attendant on acquisition of the sexual habit. This should be imparted by the father or, if he is not competent, by the physician, teacher, or clergyman. If those nearest to the boy judge it wise, the parts of this paper that concern him may be given for his study. The paper concludes with an exposure of the methods employed by advertising quacks and nostrum venders. F. C. Valentine (Transactions of the American Medical Association, May, 1903).

WOUNDS IN WARFARE, POISONED.

It is shown that the custom of poisoning the implements of warfare has been practiced from the most ancient times to the present day, and that not only vegetable, but also bacterial, poisons have been employed. By experiments the writer has shown that the explosive and the ball are contaminated, the first in 12 per cent. and the latter in 47 per cent. of instances. The wad and wadding materials are always contaminated. It is also shown that there is nothing in the act of firing, either from the heat generated or from the friction, which destroys the bacteria existing in the powder, in the wad, on the ball, or in the barrel of the gun. There is nothing in the act of firing to destroy the lethal properties of vegetable poisons, and that these are readily conveyed into wounds when they are placed in the powder, on the ball, or in the barrel. Animal poisons, like snakevenom, can be conveyed in the same manner. The facts rehearsed are so susceptible of proof that it becomes the duty of the surgeon in all criminal attempts to make a thorough examination of the weapon, and the following rules are suggested: If powder-grains are found in the clothing or wound, they should be carefully collected for examination. The projectile inflicting the wound, when recovered, should be at once dropped into media with sterile forceps. If the wound has been the result of a ricochet shot, the point of impact before penetrating the skin should be examined for the presence of poison. The inside of the barrel of the weapon should be examined for specific micro-organisms. The examination should also include a thorough study of all the ammunition remaining in the weapon. The same steps should be observed in examinations for the presence of toxins, animal and

vegetable poisons. L. A. la Garde (*Journal of the American Medical Association*, April 18, 1903).

**YELLOW FEVER, MANNER OF INFECTION
AND PROPHYLAXIS OF.**

Sir William Ferguson, in South Africa, observed that the fever was conveyed by vessels. The period of incubation ranged from eleven and one-half to twenty-seven days. The mosquito theory was first advanced in 1881. Finlay propounded the theory, and found that patients bitten by the mosquito of ships infected with the fever contracted the disease. The germ has to go through a life-cycle in the mosquito similar to that of the plasmodium malariae. Various experiments were made, but in no case could the disease be produced by the insect kept less than twelve days. Parasites may be present in the peripheral blood of the patient for the insect to become infected. In August, 1899, 60 deaths from yellow fever occurred in Tampa, Fla. In August, 1901, an epidemic, in which 3 died, occurred in Santiago, by infection through an infected mosquito. Yellow fever is produced only and solely by the mosquito. S. E. Chaillé, of New Orleans, stated that the female stegomyia mosquito can convey the germ. Isolate every patient and the disease will be destroyed. Isolation is

necessary. This was proven in Havana, not one case occurring in the last three years. Other Cuban cities have escaped yellow fever without waging effective warfare on mosquitoes. The greatest duration of 11 infected stegomyia was an instance in which one lived until the one hundred and fifty-fourth day. It is yet to be determined how long a stegomyia may live under exceptional circumstances. By the destruction of mosquitoes the disease has been mitigated. New Orleans, La., could furnish many instances when the disease was introduced. Fomites failed to infect persons after they had been infected. Without anopheles malaria does not occur, although the disease has been attributed to water and watermelon. The blood of a yellow-fever patient is infected four days after the attack. The conviction gained ground that yellow fever was an infectious disease. Infection by fomites was supposed, and they were believed to carry the disease. More places than New Orleans have suffered. General Ben. Butler demonstrated that the disease could be eradicated by cleanliness. He was heartily indorsed by the doctors, public, and press. Dr. Elisha Harris was cited. Stegomyia is the sole cause of yellow fever. J. Carroll (*Proceedings of the American Medical Association; Phila. Med. Jour.*, May 16, 1903).

Books and Monographs Received.

The editor begs to acknowledge, with thanks, the receipt of the following books and monographs:—

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VALUE OF THE LEUCOCYTE-COUNT IN PRACTICE.

THE *Journal of the American Medical Association* of June 6th summarizes a recent paper upon the diagnostic value of the leucocyte-count in gynecology by Bérard and Descos, of Lyons (*Revue de Gynécologie*, vol. vii, No. 1), as follows: "The findings were so constant in twenty-five cases of gynecological affections in which the blood-count was carefully studied that Bérard and Descos affirm with great positiveness that it is possible to determine by the leucocyte-count whether

or not there is suppuration and whether the germs are virulent or not. In affections in the female genital sphere when the leucocytes number 12,000 to 13,000 or more, with decided increase in the polynuclear cells,—80 to 85 per hundred,—some suppurative lesion exists or is forming, as, for instance, an infected hamatocele. The pus is virulent. Intervention should be postponed if possible. If operation is necessary it should be by the vaginal route, and strenuous efforts made to prevent sowing the germs on the peritoneum. When the leucocytes number 10,000 or under, either there is no pus or it is scarcely at all virulent, and operation can be undertaken with the peritoneum walled off from the field with tampons and sponges. In case of profound infection the leucocytosis indicates the moment for surgical intervention. While awaiting it the general condition should be improved by injections of serum, fixation abscesses, etc., until the acute phase is past and the leucocyte-count shows that the virulence is becoming attenuated. This is especially necessary in case of streptococcic infection. If the leucocyte-count drops from 25,000 to 12,000 or thereabouts, the germs have lost their virulence or else the reaction on the part of the organism is so decided that the surgeon can operate without fear. Of course, when there are other clinical symptoms of severe infection and the leucocyte-count remains constantly low, the prognosis is grave, as this signifies that the cellular defenses are unable to cope with the virulence of the infection."

Commentary.—An analysis of the subject in the first volume of our work¹ imposed upon us the conclusion, not only that leucocytosis pointed to the prevalence of a suppurative process, but also that "the more or less prolonged exacerbations of this condition witnessed in various diseases" was "the result of overactivity of the adrenal system induced by the toxins of pathogenic germs, poisons, venoms, products of metabolism, when any of these penetrate the blood-stream in sufficient quantities." It covers, therefore, an enormous field and constitutes a diagnostic sign of very great value, *provided*, however, the functions of the adrenal system and specific influence of each toxic upon this system are taken into account.

The manner in which leucocytosis is induced through the agency of a toxic becomes plain when the rôle of the adrenal system in the organism is recalled. Presiding, as it does, over all oxidation processes, and augmenting the activity of the functions of all organs when itself stimulated by a toxic in the blood-stream, it enhances metabolism in the leucocytogenic structures, the bone-marrow, lymphatic glands, etc. As inherent parts of a defensive system, these cells are thus supplied in large numbers to the circulation, simultaneously with the spleno-pancreatic internal secretion—*i.e.*, the trypsin poured into the splenic vein, the pancreas and spleen being stimulated with all other organs when the adrenal system is overactive. We have seen (*vide* MONTHLY CYCLOPEDIA for March, p. 99) that, while this trypsin is utilized by the leucocytes to digest their prey, they simultaneously elaborate fibrinogen, which they eject into the blood-stream. The reaction between

¹ "The Internal Secretions and the Principles of Medicine," pp. 610 *et seq.*

fibrinogen and adrenoxin supplies the heat-energy to which trypsin owes its highest activity as a destroyer of germs and their toxins—the organism's main resource for its self-preservation. This readily explains why the prognosis of pneumonia is favorable when free leucocytosis appears, and why death is practically certain when hypoleucocytosis attends even the earlier stages of the disease. If the power behind the throne—the adrenal system—is normal, the defenses of the organism are such as to render a successful issue probable; if congenitally debilitated, or worn out by inebriety, the prolonged use of patent nostrums, etc., the adrenal system utterly fails to stimulate the organs that supply the defensive elements: germs pullulate and toxins are formed which in time overpower the adrenal system and thus destroy life.

When leucocytosis is utilized as a diagnostic sign several factors must be taken into account. Besides its specific action upon tissues, each poison, whether a disease-toxin, a drug, a venom, or a physiological waste-product, more or less stimulates the adrenal system. What is the value of leucocytosis as a sign under these circumstances? In accord with the authors of the foregoing paper, we can say that "it is possible to determine by the leucocyte-count whether or not there is suppuration." Indeed, referring to typhoid fever, we ventured the opinion, in our work (p. 624) that we had in leucocytosis, "not a direct sign of impending perforation, but a means of gauging the likelihood of perforation through the intensity of the *ulcerative* process as reflected by the toxæmia." In all forms of active suppuration, septicæmia, pyæmia, etc., leucocytosis is generally present, the exceptions being represented by cases in which the adrenal system is functionally deficient. These very exceptions, however, transform the question. They point to the true meaning of leucocytosis in practice—*i.e.*, to the fact that it is valuable, not as a diagnostic sign, for it is subservient to too many factors, but as a *prognostic* sign—one, indeed, capable of acting as a reliable guide in treatment. The record of a given disease as regards leucocytosis being established, any material reduction unless accompanied with signs of convalescence points to adrenal insufficiency—*i.e.*, to failure of the organism's defensive resources and to the need of measures that will reawaken their life-saving efficiency.

C. E. DE M. SAJOUS.

Cyclopædia of Current Literature.

ABDOMINAL OPERATIONS, FÆCAL FLOODING OF AIR-PASSAGES DURING.

Flooding of the air-passages by faecal vomit is a real danger and probably has caused many unexplained deaths. Resuscitation is impossible or very difficult:

the fluid may flow by gravity through the relaxed stomach sphincters, directly out of the intestine, where it has accumulated in large quantities. The accident occurs with great suddenness and with a stomach supposedly empty. The

suffocation may be so complete that no outcry is made, and may not be noticed by the patient. It may occur as late as an hour after anaesthesia, or at any rate until consciousness is restored. We have no evidence that it can occur during consciousness, even *in extremis*. After septic laparotomy patients when returned to bed should be watched without even momentary intervals to full consciousness. A suggestion made to the writer by Dr. McArthur, that as many as possible of such cases be operated under cocaine anaesthesia, seems to him sound in the light of the above report. E. W. Andrews (Transactions of Chicago Surgical Society, March 2, 1903).

ABDOMINAL OPERATIONS. STUDY OF THE EFFECTS OF PERITONEAL SALINE INFUSIONS IN.

Based first on the established fact that there are definite peritoneal currents which waft all minute bodies from the lower portions of the abdomen toward the diaphragm, peritoneal infusions have been used in all abdominal operations. The results of 250 abdominal cases have been studied, and the fact is established beyond doubt that the use of saline infusion does not increase mortality or postoperative complications. On the contrary, the mortality is decreased, and postoperative complications—such as thirst, vesical irritation, and renal complications—are greatly lessened. A study of a series of animals in which a virulent culture of *staphylococcus aureus* was employed demonstrated that 1 cubic centimeter of undiluted bouillon culture would invariably kill the animal when introduced into the peritoneal cavity, whereas the same amount of culture introduced into the peritoneal cavity and then diluted with

100 cubic centimeters of hot normal salt solution resulted in the saving of 48 per cent. of the animals and in prolonging the life in lethal cases. Hot salt solution, when introduced into the peritoneal cavity, acts by increasing leucocytosis and diluting the toxic products, thus hastening their elimination. J. G. Clark (Transactions of the American Medical Association, May, 1903).

ACCOUCHEMENT FORCÉ, THE BOSSI DILATOR IN.

There is a small field of usefulness for the Bossi dilator in cases in which rapid dilatation of the cervix is necessary after effacement. Before effacement the colpeurynter should be used. It is more successful in multiparæ, and in dilating the cervix in those cases in which manual dilatation would be successful. It possesses advantage over the hand in asepsis in that it is not so tiring, so that the operator may carry out the subsequent delivery comfortably; the instrument is not safe, but requires careful and skilled watchfulness, and one must search for and be ready to repair more or less extensive lacerations. These are greater in primiparæ; it should never be used in placenta prævia; it does not replace the colpeurynter, the use of the hand, or cervix incisions in all cases. J. B. de Lee (Chicago Medical Recorder, April 15, 1903).

ADRENALIN, ACTION OF.

Increased blood-pressure caused by adrenalin depends on the spasmodic contraction of the blood-vessels and stimulation of the heart. The vascular spasms depend on the direct action of the drug on the vessel-walls. Adrenalin at first irritates and then paralyzes the centers of the vagi, but does not act on their peripheries. The interchange of

gases is increased by small, and markedly diminished by large, doses of adrenalin; in the last event the temperature is lowered. Death from adrenalin is caused by paralysis of the respiratory center. On the central nervous system adrenalin acts as a depressant. Intravenous and subcutaneous injection of adrenalin should be employed with great caution, in view of the inconsistency of its action. In view of the highly hygroscopic properties of adrenalin, it is best to employ it in the form of suspension or solution in water. The solution of adrenalin does not lose perceptibly in its action with the change in color. The increased frequency of the pulse following subcutaneous or intravenous injection of adrenalin should serve as a contra-indication to the repetition of the dose. P. P. Bjelaventz (Russky Vrach, February 15, 1903; Phila. Med. Jour., June 6, 1903).

ALCOHOL. GERMICIDAL ACTION OF.

Against dry bacteria absolute alcohol and ordinary commercial alcohol are wholly devoid of bacterial power, even with twenty-four hours' direct contact, and other preparations of alcohol containing more than 70 per cent., by volume, are weak in this regard, according to their content of alcohol—the stronger in alcohol, the weaker in action. Against the commoner, nonsporing, pathogenic bacteria in a moist condition, any strength of alcohol above 40 per cent., by volume, is effective within five minutes, and certain preparations within one minute. Alcohol of less than 40-per-cent. strength is too slow in action or too uncertain in results against pathogenic bacteria, whether moist or dry. The most effective dilutions of alcohol against the strongly resistant (nonsporing) bacteria, such as the pus-organisms,

in the dry state, are those containing from 60 to 70 per cent., by volume, which strengths are equally efficient against the same organisms in a moist condition. Unless the bacterial envelope contains a certain amount of moisture, it is impervious to strong alcohol; but dried bacteria, when brought into contact with diluted alcohol containing from 30 to 60 per cent. of water by volume, will absorb the necessary amount of water therefrom very quickly, and then the alcohol itself can reach the cell-protoplasm and destroy it. The stronger preparations of alcohol possess no advantage over 60- to 70-per-cent. preparations, even when the bacteria are moist; therefore, and since they are inert against dry bacteria, they should not be employed at all as a means of securing an aseptic condition of the skin. Provided the skin bacteria in the deeper parts can be brought in contact with disinfectants, alcohol of 60- to 70-per-cent. strength may be depended upon usually, but not always, to destroy them within five minutes. Charles Harrington and Harold Walker (Boston Medical and Surgical Journal, May 21, 1903).

ALCOHOLIC POISONING. SALINE SOLUTION IN.

The writer refers to a 4-year-old boy who had swallowed two ounces of undiluted whisky. Unconsciousness, shallow respirations, and a weak and rapid pulse supervened in forty-five minutes, the general condition being one of profound collapse. As no vomiting had occurred, the stomach was washed out, and general stimulation resorted to, but without effect. Hot saline injections were then tried, the child recovering consciousness within an hour, and was apparently well the next day. F. C. Forster (British Medical Journal, May 16, 1903).

APPENDICITIS, LEUCOCYTOSIS IN.

A continuous count of from 20,000 to 30,000 indicates the presence of pus; complications which might cause a hyperleucocytosis can be excluded. A normal or subnormal total count is an unfavorable sign when present in a severe appendicitis and when the abscess is circumscribed. If a diffused peritonitis is present, the higher the figures, the greater the chances of recovery. H. Goetjes (Münchener medicinische Wochenschrift, April 28, 1903).

BACTERIAL VACCINES, THERAPEUTIC INOCULATIONS OF, AND THEIR PRACTICAL EXPLOITATION IN THE TREATMENT OF DISEASE.

There is, in connection with every immunization process, a sequence of negative and positive phase followed, in the case in which the inoculation is successful, by the maintenance of a higher baseline of immunity. Inoculation of an excessive dose may involve a risk—in particular, the risk of an undue prolongation of the negative phase. The inoculation of a series of doses of a vaccine will, in the case in which the inoculations are uncontrolled by intermediate blood-examinations, involve the possibility of the production of a cumulative negative phase. The cumulative positive phase, which is a *desideratum* either in itself or as leading to the maintenance of a high baseline of resistance, is achieved only when the successive doses are properly adjusted and when the inoculations are appropriately interspersed. Finally, when all possible has been done in the way of guarding a patient against the risks attaching to the negative phase, the success of a therapeutic inoculation cannot be guaranteed. The success must in each case depend upon the power of response which is pos-

sessed by the individual. A. E. Wright (British Medical Journal, May 9, 1903).

BLOOD-CHANGES, THE DIFFERENTIATION OF THE CONTINUED AND REMITTENT FEVERS OF THE TROPICS BY THE.

Conclusion reached after a careful clinical and pathological study of modern blood-tests of a large and consecutive series of cases of continued and remittent fevers in both Europeans and natives in the hospitals of Calcutta is that only two forms exist, at any rate of long duration, namely: typhoid fever and malarial remittent fever. Further, these can be distinguished in a considerable proportion of the cases by purely clinical methods, of which the temperature-curve and pulse-rate and presence or absence of abdominal symptoms and the action of quinine are the most important. The remainder can be differentiated by the serum-test or by the differential leucocyte-count in all but a very few exceptional cases, the leucocyte-count being of special value in the tropics on account of its being available when parasites are absent as a result of previous quinine treatment and its not requiring a laboratory.—laboratories being very few and far between in the tropics at the present time.—while it also has some prognostic value.

"Simple continued fever," if it exists at all as a separate entity, which still remains to be proved, is very rare indeed as compared with malarial fevers. The so-called "nonmalarial remittent" fever in natives has been shown by the serum-test to be nothing but typhoid fever. Low fever is distinct clinically, but is probably the result of the debilitating influences of prolonged residence in a tropical climate, including latent malaria, and is not a new specific fever.

Malta fever does not occur, or at least is exceedingly rare, in Lower Bengal and Assam. Leonard Rogers (*Lancet*, May 30, 1903).

BLOOD-PLATELETS, THE STAINING OF LIVING.

The origin of the blood-platelets has puzzled physiologists for a long time. A new method of studying these peculiar bodies while they are still living has enabled the writer to throw considerable light on this subject. In studying living human blood-platelets stained with brilliant cresylene blue, he noticed, after the lapse of ten to fifteen minutes, the separation of a hyaline substance which, in the form of a cylinder, is inseparably attached to the similarly circumscribed stained substance of the blood-platelet. The nuclei of the lymphocytes and the granules of the leucocytes are similarly stained, while the nuclei of the multinuclear and the large mononuclear leucocytes are stained differently. In leukaemia there are observed markedly hypertrophic forms of blood-platelets, which sometimes attain the size of lymphocytes, and undergo in general the same changes as those described above. Similar transformations appear to take place in the lymphocytes, whose nucleus separates from the protoplasm. The assertion that the chromatic body of the blood-platelet corresponds to a nucleus has not, until this investigation, been susceptible of proof. G. Puchberger (*Virchow's Archiv*, vol. clxxi, No. 2, 1903).

BLOOD-PRESSURE IN MAN.

We are able to recognize at least one distinct service which blood-pressure has done. It has proved that arterial tension may be extremely low during

the early stage of high fevers, when the pulse is full and bounding; relaxation of the arterial walls is no doubt the cause. A question which suggests itself is whether treatment having in view a better control of the circulatory apparatus during this period might not prove of some benefit. The clinician must not be surprised to find abnormalities of pressure during the convalescence; blood-pressure is at this time as sensitive and changeable as the frequency of the pulse, and may rise or fall 20 or 30 millimeters in the course of an hour without apparent cause. S. S. Goldwater (*Medical News*, May 23, 1903).

BLOOD-PRESSURE IN SOME PATHOLOGICAL CONDITIONS.

Daily and hourly variations of tension are commoner and greater in amount than in health or in other afebrile pathological conditions unaccompanied by heart disease. In mitral insufficiency the pressure is usually normal; it may be subnormal, but is rarely supernormal in uncomplicated cases. In mitral stenosis tension tends to be higher than in insufficiency, and when both lesions are present it tends to be higher than when the latter condition alone exists, provided that compensation is fairly good. In aortic insufficiency, especially if compensation is good, the systolic pressure is above normal — often markedly so. The wave-amplitude is much greater than normal. The greatest amount of daily individual fluctuation occurs in this variety of heart disease. The pressure does not fall below the normal unless the lesion is complicated by mitral disease or myocarditis. Myocarditis is usually accompanied by high tension and cardiac dilatation by low tension. No constant relation exists between

pulse-rate and blood-pressure. G. W. Norris (*American Journal of the Medical Sciences*, May, 1903).

BUBONIC PLAGUE. YERSIN'S SERUM IN.

Yersin's serum is a remedy of the greatest value in the treatment of bubonic plague; its action is bactericidal (as shown by the degeneration induced in the bacilli) as well as antitoxic. This double action of the serum is best secured by its early administration in large doses, both subcutaneously into the lymphatic area, which drains toward the bubo, and also intravenously. In very mild cases subcutaneous injection alone will probably suffice, but in severe cases the combined method should be employed. For these latter the initial combined dose should be perhaps from 150 to 300 cubic centimeters (5 to 10 ounces), the proportion given intravenously varying with the relative severity of the general symptoms. D. L. Cairns (*Lancet*, May 9, 1903).

CANCER. INOPERABLE. TREATMENT OF. BY FORMALIN.

The writer was led to try his method from his observation, twelve months ago, that formalin in 2-per-cent. solution had the property of coagulating egg-albumin when whole eggs were immersed in it for a few weeks. He argued that, if he hardened the morbid tissue, he might convert the growth into a foreign body, and Nature would proceed to dislodge it—an inference which proved correct.

In from three to seven days after application the cancer-mass begins to detach itself in the same way that necrosed tissue separates in gangrene. A line of demarkation is formed at the edge of the malignant mass, and separation takes place in a few days, the time

varying with the size and nature of the disease.

Some twenty-four to forty-eight hours after the first application the objectionable foul-smelling discharges cease, thus showing the powerful deodorizing quality of formalin even in 2-per-cent. solution. In proportion as the fetid discharges lessen the patient becomes more bright and cheerful. In from twelve to sixteen days he was able to remove the growths in three cases,—a sarcoma of the breast, a scirrhus of the breast, and an epithelioma of the lip (recurrent),—leaving in their stead healthy granulating tissue, the skin gradually growing and closing up the wounds. He has repeatedly reapplied formalin during the healing process without any effect on the granulation tissue left, thus showing that no signs of the original growth remained, for skin will not grow over unhealthy tissue. The process of separation is completed by the aid of a pair of forceps and scissors to snip the fibrous bands that pass into the underlying granulations.

The strength of formalin solution should be between 1 $\frac{1}{2}$ and 2 per cent. If weaker than this the hardening process is not satisfactory, and the application must be continued for a longer period, thus losing time, and the process is extremely painful to the patient. Likewise if 2 per cent. is exceeded the application is painful, the diseased mass becomes surface-hardened, separation is difficult, and the risk of destroying the skin around becomes greater the stronger the solution used, until the escharotic qualities of the formalin manifest themselves.

The method of application is as follows: "Absorbent lint soaked in 2-per-cent. formalin solution (made by adding 19 parts of distilled water to 1 of com-

mercial formalin) and laid on the tumor; this is covered with jaconet and cottonwool and bandaged on. The dressing should be changed six-hourly. After the third or fourth dressing the discharges and the fœtor cease. The further process is an aseptic one. In three to seven days the tumor loses its elasticity and becomes darkened, friable, and insensitive. The further use of formalin is painless, and separation takes place as above described. Formalin in 2-per-cent. solution appears to exert a selective power on morbid tissue, or perhaps it is that the tissue, being more tender by virtue of its younger age and rapid growth, is less resistive to its action than the more mature tissue. It also acts as a powerful stimulant, thus aiding Nature to get rid of its unwelcome parasite. The treatment of the healing surface resolved itself into the ordinary method with alternate boric fomentations or sal alembroth as occasion suggested." A. F. Meredith Powell (*British Medical Journal*, May 30, 1903).

CATHODE AND ULTRAVIOLET RAYS. THERAPEUTIC VALUE OF.

These agents afford methods of treatment for extremely new growths of limited areas and superficial character, which, while not exactly certain, are extremely promising. They not only cause no pain, but tend to relieve pain, both superficial and deep, in a most pleasing and satisfactory way. They are adapted to cases which can hardly be submitted to any other method of treatment, and they afford more hope in delayed or inoperable cases than does any other method of treatment. It will be found that the odor of putrefaction may often be suppressed by their use and the putrefactive process itself checked. Burns and intense dermatitis, so fre-

quently noted when the treatment first came into vogue, may now be almost certainly avoided. More than this, they afford a supplementary method of treatment after operation, by which the benefits of the same may be enhanced and enlarged. It is not necessary to intermit such work as the patient may be engaged in, in order to carry out the x-ray or phototherapeutic method of treatment. Roswell Park (*Medical News*, May 30, 1903).

CONJUNCTIVA, TUBERCULOSIS OF THE.

Case of a girl, 10 years of age, with a history of previous good health, who had a sudden attack of fever associated with vomiting and swelling of the left cheek and eyelids. The first oculist who saw her made the diagnosis of syphilis, but in spite of treatment she continued to lose weight, and the swelling of the face increased and involved the glands about the angle of the jaw. On the conjunctival surface of the lids there were masses of granules, somewhat resembling trachoma, and in the retrotarsal fold considerable fatty, necrosed tissue. The granules when examined closely bore a striking resemblance to miliary tubercles, and microscopical examination of the necrotic tissue showed typical tubercle bacilli. Under the general treatment for tuberculosis and the local use of a wash of trikresol, 1 to 1500, the patient made a rapid recovery. Edward Jackson (*Trans. Amer. Opthal. Society; Amer. Medicine*, May 30, 1903).

CONTUSION, DIAGNOSIS OF INTESTINAL INJURY FROM.

A moderately assured diagnosis of grave injury should be made before operation is undertaken. Of 100 consecutive cases of abdominal contusion, perhaps 30 or 40 will have received a grave

injury demanding operation, while the other 60 or 70 recover without any operation. The author is of the opinion that in cases of abdominal contusion the surgeon before operating should wait for some symptom or symptoms indicative of intestinal injury. As in the presence of shock a diagnosis of intestinal injury cannot be made the author would wait for reaction to take place. No one symptom, it is held, is pathognomonic of intestinal injury, but the two most reliable are gradually increasing rigidity and an anxious, careworn, and painful expression of the face. The latter, which comes on after reaction has taken place and, it is supposed, is concomitant with development of peritonitis, is regarded as the most positive of all the symptoms of severe intra-abdominal injury.

In the next group the author would place deep and perhaps radiating abdominal pain, respiration becoming more and more thoracic, vomiting after reaction, abdominal distension, increasing pulse-rate, and secondary fall in temperature. The subject of a severe abdominal contusion should, it is urged, be carefully and constantly watched. While advising delay in doubtful cases, the author does not mean that the surgeon should wait for serious symptoms to become so pronounced that a positive diagnosis is assured, for then operative intervention is, for the most part, too late. There is a position midway between operating on every case and waiting for an assured diagnosis, where the surgeon can say that, owing to the gradual appearance of certain symptoms, there is fair reason to think that the intestinal tract may be injured, and that an immediate operation will give the best chance. Le Conte (*Annals of Surgery*, April, 1903).

DENTAL CARIES, SODIUM HYPOSULPHITE IN.

The writer recommends a trial of sodium hyposulphite in dental caries accompanied by pulpitis and the secretion of pus of a putrid odor and taste. Generally carbolic acid or creosote is used in such cases, but these often produce only little effect, and, besides, they trickle through the dressing and mix with the saliva, to the annoyance of the patient; furthermore, their handling requires great care on account of their causticity. Two cases of dental caries of the nature described were treated by the author with a saturated solution of sodium hyposulphite, applied on cotton and packed into the cavity of the tooth. In a few days the putrid odor and taste in the mouth completely disappeared. In one of the cases carbolic acid had previously been used for quite a while without effecting any appreciable improvement in the condition. Claret (*Nouveaux Remèdes*, xix, No. 3; *Mercz's Archives*, April, 1903).

DISLOCATION OF THE HIP AND BLOODLESS REDUCTION.

The writer concludes an interesting article with the following aphorisms: Do not rest content in a case of hip lameness in a young child until you have made a thorough examination of the patient and have obtained a full history of the case. The diagnosis once established, aim to effect a reduction before the sixth or seventh year. It is fatal to postpone operation. In patients beyond the age-limit fortify yourself with a Roentgen-ray picture in order to determine the exact position of the head, the shape of the same, and the relationship which the neck sustains to the shaft. Do not make long attempts at reduction in patients over ten. Bear in mind the dangers which Dr. Lorenz himself has

warned against, namely: too extensive laceration of the soft parts, paralysis which may or may not yield to time and treatment, the fracture of the femur or the pelvic bones, and rupture of an artery, sometimes the femoral. V. P. Gibney (Amer. Medicine, May 30, 1903).

DROWNING, DEATH FROM.

Prof. E. A. Schäfer, F.R.S., read a paper before the Royal Medical and Chirurgical Society, London, on May 26th, on the phenomena attending death from drowning and the means of promoting resuscitation in the apparently drowned. This embodied the report of the committee appointed by the Royal Medical Society in 1902, to investigate the phenomena attending death from drowning. Experiments were made on dead bodies with a view to determining the amount of air that could be taken in and forced out of the lungs by various methods of artificial respiration. *Rigor mortis*, however, prevented the observation of any trustworthy results. Then experiments were made on a living subject who remained absolutely passive, making no attempt at natural respiration, not even involuntarily closing the glottis, thus preventing the free passage of air out of and into the lungs. Ten methods of artificial respiration were tested in this manner, including the traction method recommended by Silvester, consisting in increasing the space within the thorax by raising the ribs, the arms being dragged forcibly forward and upward alongside of the head; the compression method recommended by Howard and Marshall Hall, depending on the principle that the air is squeezed out of the thorax by pressure on the parietes, allowing fresh air to pass in during the period of elastic reaction, following the

removal of pressure; and many combinations of the above methods with other methods, modifying the position of the patient. The results of these experiments showed that all of the methods effected a sufficient change of air to maintain oxygenation of the blood. The smallest amounts of air were yielded by the traction method alone. The combination of the traction and alternating-pressure method gave much greater results in some cases than in others; in fact, in some cases the amount of air was nearly as large as the amount in tidal air. Intermittent pressure alone proved an inadequate means of effecting respiration. Rolling, combined with pressure on the back, was also found to be strikingly efficacious. This, and the even simpler methods of rhythmical pressure upon the back of the subject lying prone, should hold a prominent place among the methods recommended for the resuscitation of persons apparently dead from drowning. These results are in accord with the practices commonly taught in America, where the method of rolling, combined with pressure on the back, is known to most of the inhabitants even of the smaller towns in the United States. Editorial (Philadelphia Medical Journal, June 6, 1903).

DRUG ERUPTIONS.

The author divides drug eruptions into nine classes: Erythematous, urticarial, papular, and desquamating rashes are produced by belladonna, chrysarobin, mercury, arsenic, iodoform, copaiba, quinine, salicin, and borax. Vesicular and bullous eruptions are produced by the majority of the drugs already mentioned, particularly by iodoform, salipyrin, arsenic, potassium iodide, and antipyrin. Pustular eruptions are produced

by the bromides and the iodides. Furuncles may be produced by arsenic, the bromides, and quinine. Abscesses may be due to self-administered hypodermic injections of morphine. Purpuric rashes may be due to antipyrin arsenic, iodoform when given internally, quinine, and sulphonal. Gangrene sometimes follows the use of arsenic, the iodides, quinine, and orthoform when applied locally. Purpura has followed the use of sodium salicylate. Pigmentation may follow the use of arsenic, antipyrin, and silver nitrate. Keratosis and hyperkeratosis have been known to result from the use of arsenic. Tumorlike lesions are especially prone to occur in the bromide eruptions. Arsenical poisoning has led to the loss of both the nails and the hair. George Pernet (British Medical Journal, May 16, 1903).

ETHYL BROMIDE IN ADENOTOMY AND TONSILLOTOMY.

Rules for the use of ethyl bromide: Do not use ethylene bromide. Do not use an old or impure solution. Do not administer it in repeated and small quantities. Give *en masse*; admit no air. Do not continue its administration longer than one minute. Another essential to success in the use of ethyl bromide in these operations is that the operator shall be quick in his work, and, in order that this may be true, a small and accurate instrument must be used. A. R. Solenberger (Journal of the American Medical Association, April 18, 1903).

FACIAL PALSY, CHRONIC, OF PERIPHERAL ORIGIN: OPERATIVE TREATMENT.

Peripheral facial palsy is remediable by facio-accessory anastomosis, but the extent of recovery appears to be limited

to associated movements in conjunction with the shoulder. In most cases the previous deformity disappears when the face is at rest. For reasons above stated, the writer would in future recommend facio-hypoglossal rather than facio-accessory anastomosis. The cases suitable for operation are those in which the paralysis has lasted so long that no recovery is to be expected—say, facial palsy lasting six months without any sign of recovery. In the writer's opinion, the sooner the operation is done after this date, the better. A suppurative causal condition producing an infective neuritis renders the prognosis after operative treatment less favorable than in cases due to trauma. C. A. Ballance, H. A. Ballance, and Purves Stewart (British Medical Journal, May 2, 1903).

FRACTURE, GANGRENE DUE TO NEGLECT IN THE TREATMENT OF.

The writer has seen the right hand of a girl of six years hopelessly crippled by a vast slough of the wrist and volar surface of the hand resulting from the maladjustment of splints. He also saw a case of compound fracture of the tibia in a young man on a drunken bout. The foot and leg were in good condition when primary adjustment was made. In the night, during a fit of delirium tremens, he kicked off everything. Very firm splinting was then applied and he was heavily dosed with narcotics. The next day at noon the foot mortified, gangrene advancing up the leg. Amputation was resorted to on the same day between the knee and ankle and recovery ensued. He also expresses caution in adjusting any kind of firm splinting in fracture, when the parts are ischemic, pale, cool, or in places numb, and refers to a middle-aged carpenter who came

under his care in a hospital some years ago, immediately after sustaining a severe fracture in the center of the femoral shaft. The limb below was blanched and cool; the dorsum of the foot numb. On the second day after admission the foot and leg were dusky, cool, and bloated. Amputation above the knee became necessary. The writer states that the vicious, pernicious advice to the student immediately to reduce and immobilize all fractures is responsible for the crippling or loss of many limbs. Boyer acknowledged that he himself on one occasion lacerated the femoral artery in trying to reduce a fractured femur, the limb being later amputated. Lawrence recorded a case of fracture of the radius, in which coldness of the hand persisted. On the third day it was in a state of sphacelus and had to be amputated.

Further illustrations are given to emphasize the facts that gangrene indicates a condition of the tissues with such devitalizing changes in the parts as may lead to their ultimate destruction or mortification, and that it may be limited or arrested after serious trauma of a limb on frequent occasions. For a part mortified there is no hope, as its resuscitation is out of the question. T. H. Manley (*International Journal of Surgery*, June, 1903).

FRIEDRICH'S DISEASE.

A study of nine cases of Friedrich's disease and of the literature of the subject shows that its predominant features are: Its occurrence in more than one member of the family, and its development in early life, usually about the time of puberty. Aside from these two factors nothing is known of its etiology. If the present-day conception of the genesis of the disease is correct, or ap-

proximately so (that it is an evolutionary defect or teratological manifestation), then very little further can be known. The distinguishing clinical features of Friedrich's diseases are: Ataxia of all purposeful movements and of station; inco-ordination due to the loss of sense of equilibrium. Loss of the tendon-jerks; diminished myotatic irritability and muscular weakness which may amount to paresis of the lower extremities. Deformities of the spine, usually scoliosis; lateral curvature and deformity of the feet,—commonly pes cavus,—with extension of the big toe. Nystagmus, static and dynamic. Disturbance of articulation and intonation.

Features that distinguish it from tabes or locomotor ataxia: Absence of lancinating pains, intactness of sensibility, normal pupillary reactions, no disturbance of vision, and noninvolvement of the urogenital sphere. Joseph Collins (*American Medicine*, May 30, 1903).

GALL-BLADDER AND BILE-DUCTS, STUDY OF FIVE HUNDRED AND THIRTY-FOUR OPERATIONS ON THE.

In Nature's defense against infection within the abdominal cavity there are three weak situations, the Fallopian tube, the appendix, and the gall-bladder, of which the first to gain an accepted surgical position was the infective lesions of the tube. While the appendix has reached an assured place in surgery, the gall-bladder has been slow to receive that attention from the medical public which its importance deserves. The author showed the relative preponderance of the two conditions according to the age of life of the patient, and also the relative frequency of operations on the appendix, gall-bladder, ovaries and tubes, and stomach. The 534 operations on the gall-bladder

and bile-passages reviewed were performed on 518 patients, with 19 deaths—a mortality of 3.5 per cent. Of the total number, 510 were for gall-stone disease, with a mortality of 3 per cent. Of the total number, 510 were for gall-stone disease, with a mortality of 3 per cent. Considering stones in the gall-bladder as uncomplicated, there were 208 cases, with 2 deaths—a mortality of less than 1 per cent. While the colic is the standard of measure in the diagnosis of gall-stones, yet it is but a small part of the clinical picture, and is readily diagnosed. It is known that the large majority of adults with gall-stones never suffer, but it is equally true that these stones only slumber, with the possibility of a painful awakening. The ideal operation, which is complete closure of the gall-bladder incision, has been successful in many of these cases of slumbering stone, while the hope of the patient that the stones will pass down and out through the common duct frequently materializes; usually there were more behind, and the writer has never operated on a patient who has passed calculi without finding more in the gall-bladder. Commenting on the safety of operations on the common duct, he states that the mortality depends more on the condition of the patient than any difficulties in the technique. He met with chronic pancreatitis in connection with gall-stone disease 18 times, and in 4 of them cholecyst-duodenostomy was successfully performed, while in the remaining 12 no special treatment was adopted. The average stay in the hospital was slightly less than three weeks, the attempt being to remove all of the stones at the primary operation. Malignant diseases of the gall-bladder and bile-duct was met with 24 times, in some of which the exact origin could not be

determined. W. J. Mayo (Trans. Congress of Amer. Phys. and Surg.; Jour. Amer. Med. Assoc., June 6, 1903).

GALL-BLADDER, THE FUNCTIONS OF THE.

To the question, is the gall-bladder as useless as it is dangerous? the writer after an analysis of the subject submits the following summarized answer: "The gall-bladder is a nearly functionless organ, inadequate in size to act as a reservoir of any value for the bile, inadequate in muscular power and in mechanical position to exercise any important effect upon the pressure of the bile-flow, entirely absent in many species without interfering with the processes of digestion or the vital functions in any way, capable of removal from a species in which it is normally present without noticeable injury, and chiefly notable as a settling basin for the formation of gall-stones, a suitable harbor for the multiplication of pathogenic bacteria, or for the assumption of pathogenic properties by nonpathogenic forms. In short, it seems a source of danger at least double any possible usefulness which it may possess." Woods Hutchinson (Medical Record, May 16, 1903).

GASTRIC CARCINOMA. BEHAVIOR OF THE CHLORIDES IN THE STOMACH AND THE CAUSE OF THE ABSENCE OF HYDROCHLORIC ACID IN.

The chlorides found in the stomach are derived from the following sources: 1. The neutral chlorides of food and saliva. 2. The free hydrochloric acid secreted by the gastric glands and that combined with albumins. 3. The combination of chlorine with ammonia. The writer believes that the total chlorides are increased because a portion of the secreted hydrochloric acid is neutralized by an alkali derived from the fluid dis-

charged from the ulcerating surface of the carcinoma and which in itself possesses a large amount of chlorine. He states that a cancer produces changes in the chemistry of the gastric secretion only after it has ulcerated, and that the free hydrochloric acid is absent because its actually secreted amount is diminished and the existing quantity has been neutralized by the alkali mentioned. The cause for both is ulceration of the cancer. Reissner (*Zeitschrift für klinische Medizin*, vol. xlv, p. 71, 1902).

HÆMOGLOBINURIC FEVER: ITS CAUSE AND TREATMENT.

Analysis of 202 cases collected showed that, of 61 treated without methylene blue or with less quinine than 5 grains (0.33 gram) per day, 26.2 per cent. died; while, of 112 cases treated with 20 grains (1.33 grams) or over of quinine, only 16.9 per cent. died. Four were treated with methylene blue, with one death. Quinine not only lowered the death-rate, but also lowered the percentage of recurring paroxysms. The writer concludes that this disease always occurs in persons suffering repeated attacks of malaria, and that it nearly always follows one or more paroxysms of malaria at the proper time for its next exacerbation. It shows all the characteristics of malaria, chill, fever, and sweat, and, when adequate examination of the blood was made, the hæmatozoa of malaria were found. Its habitat is that of the most violently malarious districts.

It is difficult, if not impossible, to conclude logically that quinine can produce hæmoglobinuria: 29.4 per cent. of physicians affirmed that it could, and 70.59 denied it. When quinine was suspended, 73.8 per cent. recovered; when quinine was administered, 83.1 per cent. recovered. Distinct recurrences of at-

tacks after the first appearance of black water in nonquinized patients, 9.8 per cent.; distinct recurrences of attacks after the first appearance of black water in quinized patients, 4.4 per cent.; of cases occurring from quinine alone, 0 per cent.; of cases occurring from malaria without quinine, 15 per cent.; of cases in which quinine was supposed to aggravate, 5.9 per cent.; of cases in which quinine was thought not to aggravate, 55.41 per cent.

This affords a preponderating evidence against quinine as a causative factor in the production of this disease. The writer advises giving 40 grains (2.67 grams) of quinine daily in hæmoglobinuric fever, either intravenously or hypodermically, until the next period of an exacerbation is safely passed; then it should be discontinued for three or four days and repeated in 20- to 30-grain (1.33 to 2 grams) doses every four to six days until five or six weeks have passed without a paroxysm. Walter Shropshire (*Medical Record*, May 16, 1903).

HIP DISLOCATIONS. MANUAL REDUCTION OF CONGENITAL.

The practical use of this method of reduction is limited by the surgeon's power and the strength of the resisting tissues. Variations in the surgeon's strength may be disregarded; but the resistance is of great importance, and the danger of using great force on strongly resisting tissues is fully realized in irreducible hip cases. To extend the usefulness of the method of reduction by manipulation it is necessary to determine as exactly as possible the relative importance of the resisting tissues and whether or not the resistance may be overcome by other means than stretching. 1. The Lorenz method is applicable in most cases in children un-

der six years of age. 2. In irreducible cases in older children it may be necessary to incise the capsule and divide the tendons of the *adductor magnus* and the hamstring group at a distance from the hip. Why does not the Lorenz method and cutting of the capsule reduce the luxation? Because of the long fiddle-bow tendon of the *adductor magnus*. Experiments on the cadaver and on patients have proved that it is impossible to dislocate the hip by traction unless this tendon is severed. Lawer Bartlett, of Boston, seeing the method of traction Lorenz employed, has constructed an apparatus which will even dislocate the hip without dividing the *adductor magnus* tendon. It consists of a frame for each limb ending at the trochanters in a double cylinder, which has a hand-like cup to fit shape of hip, and on the outer side a handle to act as the fulcrum. This is grasped and, the feet having been fastened to the frame, the frame is adducted. The fulcrum being at the trochanter, the head is forced down. If necessary a wrench can be applied to the handle, thus permitting more force to be applied. E. H. Bradford (Trans. Amer. Orthop. Assoc.; Amer. Medicine, May 30, 1903).

INFANT-FEEDING, OBSERVATIONS UPON RESULTS OBTAINED IN, WITH VARIOUS FORMS OF MILK IN TENEMENTS AND INSTITUTIONS IN NEW YORK.

The quality of milk consists in the presence or absence of bacteria and chemical constituents which cause coagulation of the substances contained in the milk. The milks that were used were ordinary grocery-store milks, condensed milk, milk from the distributing stations, and the high-class bottled milk. Contrary to the general idea, the majority of the tenement-house children

were not bottle-fed; inquiry showed that not more than two or three children in a block received their nourishment from bottles, and that in a large majority of the cases some form of sterilization was practiced by the mothers. It was also found in cases which had been selected and carefully followed, that in the summertime in 68 per cent. the results were good, and 32 per cent. bad; in winter the good results amounted to 93 per cent. By results "good" and "bad" were meant the outcome of feeding on these various forms of milk at regular stated intervals laid down by twelve selected physicians who had the supervision of the cases under observation. Curiously enough, the bad results obtained with condensed milk were not due to bacteria, because condensed milk was free from bacteria, and the water with which it was prepared was usually previously boiled. The Strauss milk in winter gave the best results, as it also did in summertime.

The conclusions reached by the writers are that the feeding of infants is a most complex question in tenement-houses; that it depends for good results upon cleanliness both in preparation of the food and of the food itself, and also upon the good attention which the patients receive. L. Emmett Holt and William H. Park (Medical Record, May 23, 1903).

INFANT-FEEDING, PRINCIPLES OF, AS BASED ON THE EVOLUTION OF MAMMALS.

The essential difference between human milk and cows' milk is in the proteids; these may be nearly of the same composition, but assume different forms. The writer calls attention to some facts relative to the development and early nutrition of the young of certain types

of mammals. The earliest types of mammals deposit eggs in a nest and nourish the young by the ejection of milk into the mouths of the offspring, the mother having no teats. In another type the egg is deposited in a pouch of the mother, where the young animal is developed. The milk is ejected by the mother along the course of certain hairs to the mouth of the young. In still higher types the egg becomes hatched within the mother, and the young animal, after birth, becomes attached to the mother's teat; the young have no power to suck. In yet higher types the young become attached to the uterine wall and have a placental development. The method of development of an animal seems to depend somewhat on the ability of the mother for defense. About the third month marsupials become attached to the mother's teat; this corresponds to the time when a woman begins to secrete colostrum. From an evolutionary standpoint it seems logical to consider an infant as passing through three stages of development: a preplacental of three months, a placental lasting six months, and a mammary of ten or twelve months. When a child has been early deprived of the breast it should be considered premature. The writer emphasizes the importance of studying the digestive changes which milk undergoes in an infant's alimentary tract, and says that the function that milk possesses of developing the digestive tract should be remembered.

In conclusion, the following considerations are emphasized: 1. In development an infant passes through three stages and should be looked upon as attached to the mother in all three. 2. At the beginning of the mammary stage an infant has but a rudimentary stomach. 3. During mammary development the mother changes

the character of the infant's food from colostrum to milk, and the infant's digestive secretions so change the character of the milk that as the digestive juices increase in quantity and strength the work of digestion is increased, for, the stronger the gastric juice becomes, the tougher the curds become, due to a combination of the acid with the curds. 4. All milk will produce tissue, but it differs in composition with the rate of growth of the young animal. Proteids differ according to the type of digestive tract they are to develop. 5. Cows' milk cannot be changed to human milk by any known method of modification. In milk modification it must not be forgotten that a food is to be sought for which will develop the digestive tract. 6. A certain minimum amount of proteids, carbohydrates, fats, and mineral material is necessary for the nourishment of an infant; breast-milk should serve as a guide to the required amount. 7. Milk is the most perfect infant-food, not only because of its nutritive properties, but also because it contains the only proteid that can develop the digestive tract. 8. The proteid of cows' milk is intended to develop the stomach of a calf to digest grass; it must be modified to meet the requirements of an infant. 9. This modification may be accomplished by mechanically or chemically altering the character of the curds by diluting them with alkalies or gruels. 10. When, for any reason, a child cannot take a sufficient quantity of cows' milk it should be supplemented by other forms of nucleo-albumins until a normal quantity can be digested; it is an error to attempt to overcome indigestion by feeding too low proteids. (Chapin.)

While it is interesting and important to study the different forms of proteid,

certain practical principles should not be overlooked. In whey a high proteid and in caseinogen a low proteid can be obtained; a child has a stomach when born which under normal conditions is able to digest these forms of proteid. Colostrum is an accidental secretion and not milk. (Rotch.)

The casein of cows' milk is not the same as that of mothers' milk. In whey soluble albumins are dealt with and not nucleo-albumins, which are the essential tissue-builders. It is not then physiological or a clinical advantage to use whey constantly. Future investigations should be along the line of the proteids and at all times the physician should aim to keep babies at the breast when possible (Chapin). *Trans. Amer. Paed. Soc. Medical News*, June 6, 1903).

INFANTILE CONVULSIONS. ACUTE AMAUROSIS FOLLOWING.

There is a form of amaurosis which occurs in infants or young children which is post eclamptic, due to anæsthesia of the visual centers. The convulsions, which may be due to various causes, are apt to be severe and accompanied with coma. The amaurosis may be associated with aphasia and paresis of hemiplegic distribution; the hemiplegia may be permanent. The amaurosis is, for the most part, transient, and hemianopsia may occur in some instances. Henry Ashby and Sydney Stephenson (*Lancet*, May 9, 1903).

INFANTILE LIFE—OBSTETRICAL SUGGESTION.

Stretching the sphincter and gives immediate aid to respiration at a moment of partial or advanced asphyxiation, which is present in so many of the newborn. For this purpose the little finger may be quickly cleansed and oiled, and

the operation done for the child while it is in a more or less anæsthetic condition; later on the operation becomes more objectionable as causing more suffering. This routine supplies early the important knowledge as to whether a competent sphincter and anal opening exist. As this stretching of the sphincter is an important aid in establishing respiration, so also it may be considered a help in peristalsis and the due establishment of intestinal function. Arthur Devor (*American Medicine*, May 9, 1903).

INTERNAL DISEASES. EXPLORATORY OPERATION IN THE EARLIEST STAGES OF.

The surgeon in his opportunities for observation and study has contributed greatly to our knowledge of internal disease, especially in its early stages. His explorations demonstrate truth and control opinions; they perfect observations, and, in showing the value of deductions, teach their weight; they prove the interdependence of symptoms on lesions and of lesions on symptoms; they demonstrate the fallacy of some inferences and the truth of others. Accumulated experience will show these things so clearly that in time the diagnosis of the clinician will approach the accuracy of scientific demonstration. In therapeutics surgery has shown what surgery can do and what it cannot do, as well as what medicine can and cannot do. Surgery will show still more clearly its own limitations, as well as the limitations of clinical medicine. Working together it seems not impossible that in the near future there will be no borderland between them. It will then have been demonstrated that internal diseases, even some of those now regarded as hopeless, will, by surgical or by medical therapeutics, or by both, be delegated to that

class of brilliant achievement to which now belong appendicitis, gall-stones, and internal hemorrhage. Maurice H. Richardson (Trans. Amer. Surg. Assoc.; Jour. Amer. Med. Assoc., June 6, 1903).

INTESTINAL RESECTION.

Suture is the most indispensable and generally applicable method of anastomosis in intestinal resection. The Murphy button is equally useful, if not preferable, under certain conditions, but very inferior under others. For the end-to-end union of segments of normal small intestine, or the end-to-side anastomosis of healthy small and large bowel, it gives results unexcelled by any other method. In unions of the larger intestine it is so far inferior to suture as to be practically contra-indicated. Pathological changes in the small intestine or its mesentery which render the perfect application of the button difficult or such as would probably disturb the course of healing, should be united by suture. Of suture methods, that of Gregory F. Connell is incomparably the best—is, in reality, the simplest; a single row of continuous suture, all within the gut, the most likely to be even, strong, and tight, with the smallest and most even diaphragm, admits of the easiest and most perfect dealing with the mesenteric border and is capable of a simple invariable technique. It is especially desirable to choose the fewest and simplest means compatible with the best work, because intestinal operations occur at rare and irregular intervals as emergencies in the hands of many surgeons, and the little conveniences which enter into highly specialized operations of repeated daily execution are, for the most part, worse than impracticable. J. H. Dunn (Journal of the American Medical Association, May 30, 1903).

KIDNEY, RUPTURE OF THE.

Study of 5 personal cases and of 660 cases gathered from literature. The causes of rupture were varying, muscular action causing 10 per cent. The author was struck by the slight force necessary for rupture to take place. Blows over the front of the abdomen with the patient on his back were one of the causes of rupture. The kidney was never ruptured on one side with an accompanying injury to an organ on the opposite side. Intraperitoneal symptoms were usually due to rupture of the peritoneum. Tumor formation occurred in 143 cases. Hemorrhage was the frequent cause of death. In all the cases there was a striking absence of injury to the omentum or the intestine.

Indications for Operation.—(1) Marked and persistent hemorrhage; (2) presence of a rapidly increasing tumor or area of dullness in the loin; (3) development of a tumor in the loin ten days or more after the injury; (4) immediate operation when there are signs of free fluid in the abdominal cavity, peritonitis, or other peritoneal injuries.

Treatment.—Expectant, incision, and tamponing; nephrotomy, and finally nephrectomy. In nephrectomy the fatalities were greatest—21 per cent. F. S. Watson (Trans. Amer. Assoc. Genito-urin. Surg.; Amer. Med., May 30, 1903).

LABOR, THE INEFFICIENCY TO RESTORE PELVIC SUPPORT OF IMMEDIATE SUTURE OF LACERATIONS SUSTAINED DURING.

Almost every woman suffers injuries during confinement from which she does not recover unless she is subjected to a secondary operation for the repair of lacerations of the pelvic floor. Immediate suture of apparent lacerations does not restore pelvic support in the vast

majority of instances. From one to two months after labor the woman should be subjected to a thorough examination with reference to the integrity of the pelvic floor. Should indications of unrepaired lacerations exist, as evidenced by vaginal relaxation and prolapse, uterine displacement, etc., an operation for repair should be made before the woman's health has been impaired. W. E. Ground (*Amer. Medicine*, June 6, 1903).

LARYNGEAL TUBERCULOSIS DURING PREGNANCY.

Five cases of pregnancy complicated by laryngeal tuberculosis observed. The writer believes the condition to be more common than is usually supposed, and that pregnancy in a tuberculous woman predisposes to laryngeal tuberculosis, and even in healthy pregnant women the larynx is more likely to be the starting-point of the disease than any other organ. The slightest hoarseness during pregnancy should be followed by a most careful examination of the larynx, and, if a diagnosis cannot be made, this should be repeated. On account of the very fatal prognosis to mother and child which is accorded the disease by all observers, the author recommends the prevention of marriage of tuberculous people, the prevention of conception after marriage, the proper diagnosis of laryngeal disturbances during pregnancy, and the removal to the most favorable surroundings if tuberculous laryngitis is diagnosed. Of his patients, the first was delivered prematurely; mother and child died about the fourteenth day. The second patient died one and a half months after delivery, the child being apparently in the best of health. Both these patients were apparently very well prior to pregnancy; the larynx was the seat of primary infection, followed

shortly afterward by the lungs. The other three patients had pulmonary tuberculosis and developed laryngeal disease during pregnancy; of these three, the mothers and two of the children died. Loehnberg (*Münchener med. Wochen.*, Feb. 24, 1903; *Amer. Medicine*, June 6, 1903).

LEPROSY, DIAGNOSTIC EXAMINATION OF ONE HUNDRED AND FIFTY CASES OF.

The microscope is the supreme agent of the final diagnosis of leprosy. No patient should be committed to a segregated colony without a bacteriological demonstration of the disease. Of clinical symptoms, maculæ, chiefly leucodermic spots, are found in 89 per cent. of all cases. The lepra nodule—found in 74 per cent.—is the one chief distinguishing lesion of skin leprosy. Thinning or complete loss of the eyebrows and lashes is present in 63 per cent. Atrophic changes in hands and forearms, with retraction and contraction of fingers and enlarged ulnar nerve in 32 per cent., a leading feature of nerve leprosy. The plantar ulcer found in 26 per cent.—usually on the ball of the foot. Absorption of phalanges in 16 per cent., with occasional spontaneous amputation. Elephantiasis of hands and feet in 16 per cent. Facial paralysis in 11 per cent. The entire body should be carefully tested for anæsthetic areas. Several of the above symptoms can be found in some slight degree at least in every leprous subject. J. T. McDonald (*Journal of the American Medical Association*, June 6, 1903).

MASTOIDITIS, THE GREAT VALUE OF DRAINAGE AND ICE IN THE EARLY STAGES OF.

The early stages of mastoiditis are replete with opportunities for doing work

that will not give the patient much relief, but save him from many dangers. In the writer's hands a free incision of the drumhead is very efficient, if a small, but strong, knife be used, so that the tissues can be laid open to the bone as the blade comes out along the posterior superior wall. Constant cold by the Sprague icebag is deemed by the author to be the best antiphlogistic, safe in quite advanced cases, if the tympano-Wilde's opening mentioned be free and kept free until inflammatory action subsides. Such treatment continued three days after removal of all active symptoms practically prevents relapses. Improvement is usually noticed within twelve hours; if delayed beyond thirty-six hours the external operation is indicated. To rely on these measures it is necessary: (1) that it be an acute case without symptoms of intercranial involvement; (2) that the patient remain within easy reach; (3) that drainage be maintained by supplementary incision if necessary; (4) that the nursing be intelligent and faithful, so that the ice application shall be constant. S. F. Snow (Transactions of the American Medical Association, May, 1903).

MILK, FRESH.

It has not been sufficiently well recognized that one of the most important problems of the milk-supply of a large city is the avoidance of too old and of soured milk because of the time required between the country milking and the feeding of the distant city babies. With the advent of the summer the Chicago Health Department reports an increase of $33\frac{1}{3}$ per cent. in the number of deaths, under five, of children—138 week before last, 184 the next. This is charged to milk of poor quality, due chiefly to the fact that farmers and poor

city families often have no ice, and that the milk may be from thirty-six to sixty hours old when given to the child. Under such circumstances there must be a rise in the infant-mortality. With the trolley lines now running into every part of the neighboring country the abuse of long-kept milk should be instantly abated. There is no reason why cold and pure milk should not be delivered at the doorstep within a few hours after the milking. This is one of the great possible blessings of the development of the trolley system. Let our health boards at once set about its utilization. Editorial (American Medicine, May 30, 1903).

MORTALITY, POSTOPERATIVE.

Deaths following operations may be arranged under five groups, as follows: 1. Death due directly to the operation. 2. Death due to some complication—so-called traumatic complication, either infective or noninfective. 3. Death resulting from some complication in the part of the organ operated upon, such as loss of cerebro-spinal fluid in operations on the head, pneumothorax in operations on the chest, or intestinal occlusion following abdominal operations. 4. Death due to disease of some organ other than that operated upon or to a bad general condition. 5. Death due to some intercurrent disease unconnected with the operation itself. While death in the fifth class of cases might be called unavoidable, this was not the case in the first four groups, and study of them was therefore necessary.

In many instances, for example, death was directly attributable to the fact that the operation was deferred too late, as in hernia, when delay had permitted the formation of intestinal occlusion or adhesions leading to strangulation. Again,

death due to the coexistence of disease in other organs might be averted by a more exact diagnosis following a careful examination of the patient; in such cases treatment should be directed to the affected organ before operative intervention was had. José Ribera y Sans (Trans. Fourteenth Internat. Med. Congress; Medical Record, May 23, 1903).

NEURASTHENIA, AND ITS TREATMENT BY ACTINIC RAYS.

Actinic rays are chemical in their quality, but of small caloric value; they exist mainly in the ultraviolet zone of the spectrum; actinic rays derived from high-power electric light are similar or identical to those of solar radiation; their use is as rational as that of sunlight itself; their value lies in their decomposing, but at the same time reconstructive molecular, action upon the body tissues, mainly the fluid elements; by the method described their activity is enhanced by the generation of ozone in free and nascent form; their ultimate effect is one of oxidation, and consequently they increase the metabolic changes, thereby augmenting the natural processes of regeneration within the system; the germicidal action is especially pronounced on account of the fact that few germs can exist in the presence of free or nascent ozone. A. E. Sterne (Trans. Amer. Med. Assoc.; Amer. Medicine, June 6, 1903).

NEURASTHENIA, MENTAL SYMPTOMS AND.

In recent years the general practitioner has come to realize how serious may be the condition known as neurasthenia. It is well known, too, that in the early stages the affection may be aborted if its beginnings are properly

noted, and thus a long period of mental and nervous depression, sometimes proceeding even to nervous prostration, prevented. The difficulty in this has been the comparative latency or, at least, lack of suspiciousness of the early symptoms of the developing condition and the failure to recognize danger-signals of importance. In recent years various symptoms and habits have come to be recognized as due to neurotic conditions and to neurasthenia and psychasthenia in varying degrees. These affections are practically always due to a deterioration of the physical condition of the individual, and consequently proper treatment with a rearrangement of the habits of the patient in the matter of work, exercise, rest, sleep, outdoor air, and food may bring about an alteration of metabolism that will prevent the further development of neurasthenic symptoms.

In recent years the mental symptoms associated with neurotic conditions which have attracted most attention are the various tics, peculiar habits, obsessions, and the like. When scarcely more than a decade ago Gilles de la Tourette published his book on convulsive tics these conditions had been very little studied and had received nothing like the attention that the subject merited. Various repeated motions, winking, grimaces, wrinkling of the forehead, peculiar movements of the hands, habitual movements of the fingers, supposed previously to be scarcely more than bad habits, proved, on careful observation, to be commonly the result of rundown conditions, affecting the nervous system, lessening inhibition, and so giving the liability to slight motor explosions of various kinds, with resultant unnecessary and almost involuntary movements. It was noted that these were peculiarly liable to affect neurotic individuals with

a certain amount of family heredity as regards nervous conditions, and were usually worse at times, when overwork, loss of sleep and appetite, or emotional stress made the patient's general condition less robust and his power of inhibition less capable than it had been previously.

Besides these physical habits it was found that such neurotic patients were also liable to be affected by mental peculiarities and habitual states of various kinds. A special form of these was the so-called phobias, or fears of doing certain things. Many neurotic individuals are unable to walk in a narrow street where the perspective causes the upper stories of the buildings apparently to come together in the distance and which consequently gives them the feeling of being shut in. This is known as claustrophobia. Many persons cannot walk in an open wide space where the absence of buildings gives them no fixed object on which to settle their vision. A sense of tremor comes over them while crossing a square or even a very wide street. This is called agoraphobia, from the Greek for market-place. Other patients cannot sit in the front row of a gallery because of the fear that they may be tempted to throw themselves over. Many of these conditions may seem unimportant to a general practitioner, but they will be found not infrequently associated with neurasthenic conditions and will be much more annoying to the patients about the time that neurasthenia is gaining a hold upon the nervous systems. Aggravations of such symptoms are often a sign that the physical condition is running down and that an attack of severe neurasthenia may be looked for unless the patient can be persuaded to a change of life and habits without delay.

In a recent issue of the *Journal of Nervous and Mental Diseases*, Dr. S. Weir Mitchell, in a paper read before the Philadelphia Neurological Society, calls attention to a special set of symptoms that he calls "reversals of habitual motions," which he has found symptomatic of neurotic conditions in individuals whose mental power of inhibition usually impaired by heredity has been still further affected by severe emotional strains or by overwork. Some of these symptoms—as, for instance, the habit of reading books beginning at the end first—might seem without importance, since so many readers, especially of the feminine gender, are apt to follow it, to some extent, at least, as a routine practice. As a matter of fact, however, in this case, the habit had become so completely an obsession, had gained such an absolute mastery, that she was unable to read in any other way. Other patients mentioned had acquired the tendency of putting their stockings on their hands and their gloves on their feet and of putting their clothes on in reversed order, putting even their shirts, for instance, first over the feet.

Most of these symptoms might seem of trivial significance, and yet it is the careful observation of such minor signs that indicate the beginnings of more serious nervous trouble and even furnish warnings of the care that must be exercised with regard to such patients and the attention their cases may demand. Needless to say, symptoms like these develop only in individuals who are of less vigorous mental caliber than others, but they must constitute the care of the physician and even in obscure forms may be recognized by the general practitioner if he will but realize the guides to investigation that recent careful work by specialists in these lines has provided for

him. Editorial (Medical News, June 6, 1903).

PALLOR VERSUS ANÆMIA.

Pallor is often confounded with anæmia. The blood should be examined in all cases of pallor, since many conditions may give rise to ochriasis, viz.: the emotion experienced by some patients when undergoing examination at the hands of the physician, their temporary pallor subsiding as they become more reassured; insufficient outdoor air and exercise, giving rise to insufficient peripheral circulation, though the quantity and quality of the blood may be normal; ill-defined myxœdema, in which the blood-vessels are narrowed by pressure upon them from the gelatiniform œdema and sclerosis of the subcutaneous tissues. The resulting pallor may give rise to a faulty diagnosis of anæmia. Though pallor may be due to the mechanical influences mentioned, thyroid insufficiency may, in itself, produce anæmia, hence the importance of blood-examination: the scrofulous or lymphatic diathesis, with the thickening of the integument upon face and extremities, may produce pallor for the same mechanical reasons obtaining in myxœdema, though examination may show the blood to be normal; aortic insufficiency with peripheral vasoconstriction gives rise to a pallor which at first sight suggests anæmia; peripheral vasoconstriction is, in the majority of cases, responsible for the pallor seen in Bright's disease, though anæmia secondary to the nephritis may occur. Finally, in a certain proportion of cases, a condition of oligohæmia may be responsible for pallor, the quality of the blood being normal, though the quantity is insufficient to thoroughly irrigate the skin. M. Labbé (Gazette Médicale de Nantes, April 11, 1903).

PANCREAS, PATHOLOGY OF.

The division of pancreatic diseases suggested by Fitz in his original monograph is the best yet presented. The three forms of acute pancreatitis are the hæmorrhagic, the suppurative, and the gangrenous. Fat-necrosis occurs with the hæmorrhagic and gangrenous forms, but not the suppurative. The etiology of acute pancreatitis is now much clearer than before. It has been shown that if substances be thrown into the pancreatic duct,—as, for instance, chloride of zinc or acids, or formalin or bacterial products,—hæmorrhagic pancreatitis results. Natural and artificial gastric juice, as has been shown by the writer, produces the same result. The interesting feature is the great rapidity with which pathological changes occur. One hour after the injection leucocytes can be seen wandering from the blood-vessels, and in two or three hours hyaline necrosis has taken place. Simon Flexner (Proceedings of the Congress of American Physicians and Surgeons; Med. News, May 16, 1903).

PANCREATIC DISEASE, UNCERTAINTY IN DIAGNOSIS OF.

In spite of all the work that has been done on the pancreas in recent years there is still much uncertainty as to diagnosis. Even with regard to diabetes the connection of the pancreas is as yet not clear. Some cases of severe diabetes have perished from the disease without presenting any noticeable lesions of the pancreas. It seems to be proven from recent cases that the pancreas is intimately associated with polyuria and that this often precedes pancreatic diabetes. At first sixty to ninety ounces of urine are passed, then some glycosuria makes its appearance, and finally true diabetes sets in. This sequence of events follows

operation on the pancreas not infrequently. C. G. Stockton (Proceedings of the Congress of American Physicians and Surgeons; *Med. News*, May 16, 1903).

**PERITONITIS, SPREADING AND DIFFUSE.
TREATMENT OF THE PERITONEUM
IN.**

The purulent forms of peritonitis may be divided into three classes: 1. Cases in which there is a localized collection of pus with limiting adhesions. 2. Cases with spreading peritonitis, in which there is no limitation of the process by adhesions or gravitation, but in which the limits are ascertainable. 3. Cases of general peritonitis, in which no parts of the peritoneum, possibly excepting the lesser sac, can be demonstrated as free from the invasion. The treatment which has given the best results in the author's experience is as follows: 1. Early operation. 2. Lavage of the peritoneum with large quantities of saline solution. 3. Closing of the peritoneal cavity without drainage, unless the latter is absolutely indicated by the presence of nonabsorbable amounts of necrotic material. Joseph Blake (*Trans. Amer. Surg. Assoc.; Jour. Amer. Med. Assoc.*, June 6, 1903).

PNEUMONIA, HICCOUGH IN.

The appearance of this symptom from the fourth to the sixth day is not uncommon. The writer has made it the subject of study. As a rule, hiccough is noisy and violent, and occasionally the diaphragmatic contractions cause the patient a great deal of inconvenience. The sitting posture increases the symptom or may cause its reappearance after it has declined. Generally speaking, it is accompanied by severe pain, which is most marked in the lumbar region.

Digital pressure along the course of the phrenic nerve may reveal the presence of tender spots. Occasionally there is also severe vomiting or retching and very marked insomnia. These latter complications are fortunately of infrequent occurrence, and seem to be present in those cases in which diaphragmatic pleurisy or mediastinitis are also present. Hiccough by itself is not necessarily a grave prognostic sign, but it is undoubtedly a fact that, when it continues or is severe and accompanied by vomiting, insomnia, and restlessness, the strength of the patient is rapidly diminished, and he may be soon brought into a condition of great danger. It is only in exceptional cases that a fatal termination is brought about, as diaphragmatic pleurisy, of which it is an indication, is usually recovered from. This is explained by the fact that diaphragmatic pleurisy is usually of pneumococcal origin, and as such is of good prognosis. The writer, however, emphasizes the fact that hiccough is a complication of pneumonia, and that any complication in this disease requires careful management. As regards treatment, the injection of morphine is the best means of alleviating the symptom. Assailey (*Thèse de Lyon*, 1902; *Brit. Med. Jour.*, May 30, 1903).

POSTTYPHOID SEPSIS.

In cases of typhoid fever after the fourth week there has often been noticed a fever which is not typhoid, unless there is a relapse. Of course, there may be an infection of the bladder and other organs due to the typhoid bacillus; yet in reality this is not a typhoid fever, but a true septic fever, due to the presence of the germ of typhoid. Almost all cases of relapse in typhoid fever take place in from three to twenty-five days

after the symptoms of typhoid have disappeared. One relapse is common; a second relapse is comparatively rare. Posttyphoidal fevers owe their origin to three causes: First, the ordinary rise of temperature, which continues after the typhoid symptoms defervesced, and in the second week following the typhoid infection. These are due to asthenia. Secondly, those of importance, which last two weeks, where it is necessary to give the patient solid food and get him out of bed. The temperature may be continuous with that of typhoid, or after an interval of three days it may rise. In these cases there is no delirium, no eruption, and no tympanites. Not a few of these have heart collapses, but in the end they will get well, provided they are taken out of bed and properly fed. This sort of fever may run to 103° F., or even as high as 107° F., with chills. There may be a severe and long-continued fever, which may terminate fatally. These occur four weeks after the inception of the fever, and are true cases of septic fever, the morning temperature being 100° F. and the evening temperature perhaps as high as 103° F. There may be intervals of one or more days and then a chill. These patients look septic, and are septic; the mind is often dull, but there is never delirium; there may be thrombosis of one or both femorals. Autopsies show the cause of death to be sepsis and starvation. These patients should be taken out of bed and fed, when they will gain flesh in a most rapid and astonishing manner. One of the office cases gained twenty pounds in the space of ten days. In the end of typhoid there may come on an infection so severe as to resemble streptococcic invasion. These also call for solid food and exercise. Francis Delafield (*Medical Record*, May 23, 1903).

PROSTATE, CANCER OF THE.

Statistics in regard to cancer of the prostate are very meager. This is probably due to the fact that cancer of the prostate is so small as to render careful pathological examination of the gland necessary in order to discover the cancer. The writer estimates that cancer is present in from 5 to 10 per cent. of cases of enlarged prostate, and quotes two cases reported by Brooks and Greene in which cancer was found in fifty-eight examinations of enlarged prostate. He considers that the residual urine bears no relation whatever to prostatic cancer. Pain is referred to the perineum, rectum, and also to the sciatic nerve. The youngest case reported was in a man aged 49; the average age is 68. For the secondary enlargement of the lymphatics the writer refers to 71 autopsies of cancer of the prostate, in 85 per cent. of which the glands were infected—30 per cent. inguinal, and a still larger percentage were postmesenteric and the glands along the iliac vessels—5 per cent. being axillary glands. He reported a case in which the patient had a burning in the perineum, a small amount of residual urine, and slight enlargement of the prostate. Prostatectomy was performed. The right lobe was found to be cancerous, and the left lobe of the organ was simply hypertrophic. R. H. Greene (*Trans. Amer. Assoc. Genito-urin. Surg.; Amer. Medicine*, May 30, 1903).

PUERPERAL ECLAMPSIA, RENAL DECAPSULATION FOR.

The writer presents renal decapsulation as a further resource, additional to those already at our command, in the treatment of puerperal eclampsia of renal origin. The renal origin of the eclampsia is insisted upon, as renal decapsulation is manifestly out of place

in the absence of evidences of involvement of the kidneys.

Renal decapsulation was first proposed and performed by the writer for the cure of chronic Bright's disease. The encouraging results obtained led to a tentative extension of the operation to other diseased conditions of the kidneys, such as acute hæmorrhagic nephritis, acute pyelonephritis with miliary abscesses, and polycystic renal degeneration.

A case in which the operation was resorted to is epitomized as follows: Primipara, aged 23. Typhoid fever during the fourth month of pregnancy. Symptoms of nephritis first noted during the seventh month. Uræmia and eclamptic seizures near the end of eighth month. Five severe convulsions within sixteen hours, followed by forced delivery during fifth convulsion. Freedom from convulsions for forty-six hours after delivery. Then return of convulsions, six severe convulsions, not counting minor manifestations, occurring in eighteen hours. Decapsulation of both kidneys. No further convulsions and rapid restoration to complete health.

The case narrated is believed to be the first instance of operation upon the kidneys undertaken with a view to the cure of puerperal eclampsia. The idea of treating puerperal eclampsia of renal origin by decapsulation of the kidneys is the logical outcome of the success attending renal decapsulation, at the hands of the writer, in chronic Bright's disease and other conditions of the kidney, as already alluded to. A further idea underlying the adoption of the treatment described in the present case is based upon the acknowledged efficacy of phlebotomy in the control of uræmic seizures, whether occurring in or out of the puerperium. If bloodletting is good in itself, why should not the abstraction

of blood directly from the kidneys, which necessarily accompanied renal decapsulation, prove still more efficacious?

Renal decapsulation was performed in the writer's case for convulsions beginning sixteen hours before delivery and persisting three days after the completion of labor. It is admitted that the patient *might* have recovered without renal decapsulation, but the indications—deepening uræmia and increasing violence of the convulsions—certainly did not point that way.

The practical deduction from the happy result obtained is that we possess in renal decapsulation an additional potent resource in the treatment of puerperal eclampsia of renal origin. Personally the writer should not hesitate to apply it again in a similar instance. He would even go further and propose a trial of renal decapsulation in puerperal convulsions of nephritic origin occurring prior to the beginning of labor. The mother would certainly be benefited, and the occurrence of premature delivery or the necessity of inducing it might possibly be averted.

The writer's clinical experience has, he thinks, amply demonstrated that renal decapsulation is the most powerful, and practically a uniformly successful, means of increasing the urea output of the kidneys and of thus counteracting the dangers of uræmia. G. M. Edebohls (New York Medical Journal, June 6, 1903).

PULMONARY TUBERCULOSIS. LOCAL TREATMENT OF.

The original practice was commenced in 1887 by Rosenbørg and Beebag, who injected menthol dissolved in oil into the trachea by the aid of a laryngoscopic mirror. The technical difficulties of the procedure have retained the practice in

the hands of a few laryngologists, whereas the method now described can safely be employed by all practitioners. He condemns as unnecessarily severe the method of Féré, who passes the left forefinger into the mouth until it reaches the epiglottis, and uses it as a guide for the nozzle of the syringe manipulated by the right hand.

Mendel's method is based upon the principle that liquid poured into the glosso-epiglottidean sulcus falls by its own weight through the larynx into the trachea, provided that the mouth is held open and the tongue drawn well forward. The author acknowledges that this assertion is new, and gives experimental evidence of its correctness in the dead body—in a living dog and in the living human subject.

From these experiments he draws the following conclusions: (1) all fluid injected into the glosso-epiglottidean sulcus passes round the epiglottis and reaches the air-passages; (2) this passage of fluid gives rise to no reflex action; (3) if the fluid reaches backward to the œsophageal opening, it can only pass down by a voluntary act of swallowing, and can be spat up at will. He uses Bee-hag's syringe fitted with different-shaped nozzles to pass more easily through different mouths. He seats the patient opposite him in a good light, and holds the tongue well forward in a napkin with the left hand; he then passes the syringe backward until the nozzle is over the glosso-epiglottidean sulcus, when he sharply delivers its contents. During the several operations no cough, spasm, or nausea is experienced. The injection is felt to pass down the chest, and imparts an agreeable sensation of freshness, due to the essential oil.

An interesting point is here brought out, that this sensation is not equally

distributed throughout the chest; if one lung is affected the sensation in the corresponding side of the chest is diminished; in other words, each lung receives the vapor of the injection in direct ratio to its respiratory surface. Further, as a consequence of treatment, the respiratory surface of the affected lung increases, and the area over which the sensation is received correspondingly enlarged. At first it is necessary to warn the patient to spit up any of the injection that remains in the mouth; but the swallowing of a little does not produce any harm; after a short experience in the treatment none remains in the mouth.

Previous observers have used menthol and creosote in oil. The author thinks these drugs too irritating, and employs eucalyptus, thyme, wintergreen, iodoform, and guaiacol. Each of these drugs was tried on dogs before being used on man. At the commencement of treatment, before the idiosyncrasy of the patient is observed, a 1-per-cent. solution of eucalyptus is employed; this is rapidly and progressively increased in strength to 5 per cent. Nine cubic centimeters ($2\frac{1}{4}$ drachms) of the solution are injected every fourth day for one month. No other drug treatment is used. After the lapse of one or more weeks, according to the condition of the patient, treatment is resumed for another month, and so on. The contraindications are (1) constriction of the vocal cords, (2) acute tracheitis, (3) violent hæmoptysis, and (4) well-marked cachexia. The drug employed acts first as an antiseptic and is then absorbed, thus combining the advantages of a local antiseptic and a hypodermic injection.

One hundred and ten cases were treated by this method. In one-fifth of these the treatment had no effect:

in one-third the improvement was marked in the general and local condition; in the remainder the auscultatory signs disappeared or were markedly diminished after a month's treatment. Mendel (*Archives Gén. de Méd.*, March 17, 1903; *Brit. Med. Jour.*, May 30, 1903).

SALINE INFUSIONS, THE VALUE OF.

Study of the question of the elimination of toxic substances from the diseased organism. A number of rabbits were given subcutaneous injections of the minimal lethal doses of aniline, strychnine, arsenic, ricin, and cantharidin. In each case as soon as the symptoms appeared a saline infusion was given in the crural vein, with the usual precautions. It was distinctly shown that it is possible to hasten the elimination of the poison by the administration of saline infusions, and this is undoubtedly due to the increased diuresis which almost invariably follows this procedure. The early application of the remedy may lessen the effects of the poison by merely diluting the quantity absorbed, but consideration should be given to the fact that some toxic substances may be diluted and eliminated much more readily than others, and also that the degree of their union with the living cell varies greatly. Owing to the latter, they may be given up to the surrounding fluid medium with ease or difficulty, and, therefore, although an infusion may produce a diuresis, this may not be of any value as far as eliminating any of the toxins is concerned. The behavior of the kidneys in this procedure must also be considered; the author found that if a poison can be eliminated by flushing the kidneys, as it were, its effect on the renal tissues may have a marked influence on their excre-

tory powers. This was plainly shown in the experiments with aniline and arsenic. Both are blood poisons and may cause congestion and hæmorrhage by clot formation in the capillary network. After arsenic it was not possible to bring on a diuresis. In the case of aniline, however, a marked diuresis may take place before the poison has been able to do any damage to the kidneys, and in this way it may be eliminated before the organism as a whole has been affected. A series of clinical observations of the employment of saline infusions in a variety of diseases is also appended. The results were uniformly good, especially in certain cases of severe anæmia, the only unpleasant aftereffect noted being a rise of temperature, preceded by a severe chill. W. Ereklentz (*Zeits. f. klin. Med.*, vol. xlviii, No. 3; *Medical News*, June 6, 1903).

SARCOMA, THERAPEUTIC VALUE OF THE X-RAY IN.

Series of thirty-six cases, two-thirds of the number consisting of the round-cell variety. Of this total number, it could be claimed in but four that the growth had disappeared, and unfortunately in these there was recurrence. In all, however, there is no doubt that a certain relief of symptoms can be obtained, although by the use of the x-ray alone sarcomata are not profoundly influenced.

The writer believes that the best results are to be obtained by the use of the combined mixed toxins and x-ray, there being no doubt that occasional cases which our knowledge does not yet permit us to choose from the unfavorable class are profoundly influenced and, if not absolutely cured, much retarded in their development by the exhibition of this treatment.

So far as danger is concerned, it sums itself up into a judicious use of the agents, so that too much of the neoplasm may not be liquefied at once. Unless this precaution is taken it is quite possible to make the patient extremely sick from septic absorption, and it is not outside the realm of the possible that metastatic growths may occasionally be caused by the absorption into the circulation of masses of still living malignant cells. Under no conditions does he consider it advisable to use the combination except in inoperable cases or possibly very rarely in place of certain amputations. That the x-ray surely inhibits sarcomatous growth, particularly when used with the toxin, is not to be doubted. The cases upon which it acts favorably, so far as ultimate outlook goes, are, however, rare. But in these it should be expressly noted that the treatment, particularly the rays, should certainly be continued for months, and probably for years. William B. Coley (Proceedings of the American Surgical Association; *Med. News*, May 16, 1903).

SHOCK, TREATMENT OF.

The writer has used adrenalin chloride in a number of cases with positive results, employing the 1 to 1000 solution in doses of 4 to 8 drops hypodermically. The physiological action, as well as the clinical experience that has been obtained from its use, would seem to indicate, he states, that it is a remedy of great value in vasomotor paresis or irritation of the sympathetic-nerve centers. It has served him so well in five cases that he now always carries it in his emergency case and uses it almost daily in any condition of great cardiac depression as well as shock. F. H. McNaught (*International Journal of Surgery*, June, 1903).

SMALL-POX, RED-LIGHT TREATMENT OF.

Small-pox is essentially a cold-weather disease, when there is but little direct sunlight; hence it is probable that exposure to diffuse winter daylight could not produce any effect on the skin. The predilection for the face and extremities which the eruption often displays is ascribed to the greater vascularity. Again, if irritation of the skin takes place after the appearance of the eruption, it does not increase the number of lesions or otherwise unfavorably influence the eruption. If Finsen's theory that the exclusion of chemical rays prevented inflammation were correct, the negro ought to suffer much less severely than the white man, as he has been given by Nature the best possible protection against the injurious influence of the actinic rays of the sun. As to pitting, it is less determined by any special treatment than by the vaccinal condition of the patient and the severity of the disease. Even an attack in the unvaccinated may leave only mild scars. The writer's experience, however, is limited to two cases in young adults who were exposed on the third day, before the lesion had become vesicular. One case died and the other recovered, but with most disfiguring scars. J. F. Schamburg (*Journal of the American Medical Association*, May 2, 1903).

SMALL-POX. XYLOL IN THE TREATMENT OF.

Xylol in doses of 15 drops in red wine four to six times daily, and external applications of 1-per-cent. carbolized vaselin or cold cream, are highly recommended by the writer. In all of the six cases under observation the treatment was commenced during the eruptive stage, on the second, third, and even the fourth day of eruption. Not a single

patient developed pustulation. If some of the vesicles commenced to suppurate prior to the commencement of the treatment (usually on the scalp and face), pustulation did not advance and the pus underwent caseation. The vesicles with the caseated contents did not suppurate, but became contracted and dried up, leaving a thin, superficial scab. The eruption which appeared at the beginning of the treatment in the form of nodules remained in that condition without becoming vesicular. The course of the disease was either afebrile or, if fever did develop, it was of an extremely irregular type, having in no case lasted more than four days from the commencement of the treatment. In none of the patients thus treated did any scarification remain, although no precautions were taken to prevent this. I. K. Vischnevsky (Russky Vrach, Feb. 8, 1903; Phila. Med. Jour., May 30, 1903).

SPINAL CORD, CYTODIAGNOSIS IN AFFECTIONS OF THE.

Much attention has been given by neurologists during the past three years to the clinical study of the cerebro-spinal fluid and the subject of the cytodiagnosis of affections of the spinal cord. A valuable account of the facts ascertained and the results achieved in these respects in cases of tabes dorsalis, general paralysis, and other nervous affections is published in the *Revue Neurologique* of March 30th, the chief contributors being Professor Brissaud, Professor Widal, Dr. Pierre Marie, Professor Babinski, and Dr. Gilbert Ballet.

In the first of these communications Professor Widal, Dr. Sicard, and Dr. Ravaut stated that, since Babinski and Nageotte had reported their collected observations on the cytodiagnosis of 26 cases of tabes in May, 1901, much work

has been done on the subject. These two authors had stated that a more or less marked lymphocytosis was present in the cerebro-spinal fluid in 25 out of the 26 cases examined. Since then Professor Widal and his colleagues had examined the cerebro-spinal fluid in 37 cases of tabes dorsalis, both of recent origin and of long standing, drawn from the wards of Professor Raymond and others. Lymphocytosis was observed in all these cases except 1. In 30 cases the lymphocytosis was distinctly confluent and in 6 it was discrete. In all these cases the lymphocytes were sufficiently numerous to enable at least from six to ten to be counted in each field of the microscope according to the technique pursued by the authors. These lymphocytes were the most numerous cellular elements present in the cerebro-spinal fluid, but sometimes large cells, which were difficult to classify as mononuclears or as endothelial cells, were also met with. The technique consisted in drawing into a sterilized tube a small, but fixed, quantity of the fluid, which was immediately centrifugalized for ten minutes. The supernatant fluid was decanted and the sediment was transferred by a fine pipette to a glass slide and allowed to dry at a temperature of 37° C. The specimen was then fixed in a mixture of equal parts of alcohol and ether, stained with hæmatoxylin and eosin or with thionin, and examined under the microscope. In normal cerebro-spinal fluid lymphocytes are altogether absent or exceedingly rare. In tabes dorsalis they are abundantly present, as also in meningeal tuberculosis, syphilitic myelitis, and in general paralysis of the insane. "Their presence is an indication of a simple process of irritation." The presence of polymorphonuclear leucocytes indicates a state of congestion or

inflammation, as these elements come only from the blood-vessels by diapedesis. In syphilitic patients the occurrence of hemiplegia is followed by the appearance of lymphocytes in the cerebro-spinal fluid, and the same appearance results from the growth of cerebral and spinal tumors which irritate or involve the meninges. On the other hand, in hysteria, epilepsy, neurasthenia, and typical polyneuritis there is no such lymphocytosis. "The virus of syphilis seems to have a predilection for attacking the meninges" and producing lymphocytosis.

Professor Brissaud and Dr. Buander stated in their communication that they had examined 8 cases of tabes dorsalis. Seven of these were of three years' duration or less, and in all there was distinct or marked lymphocytosis. In the eighth case of tabes of twenty years' duration there was a feeble degree of lymphocytosis. Professor Babinski stated that he had examined 10 cases of tabes dorsalis and 7 of general paralysis of the insane, and that moderate or marked lymphocytosis was present in every case without exception. Dr. Gombault had examined 11 male and 8 female cases of tabes dorsalis. In 8 of these 19 cases there was abundant and confluent lymphocytosis, in 2 it was moderate, and in 1 it was absent. These last 3 were non-syphilitic cases of tabes. Dr. Gilbert Ballet had examined 8 cases of tabes dorsalis, in 5 of which lymphocytosis was present. A similar condition was met with in 6 out of 8 cases of general paralysis of the insane. Dr. Pierre Marie had examined 20 cases of tabes dorsalis of from two to twenty-five years' duration. In 6 there was abundant lymphocytosis, in 10 there was more than a moderate amount, and in 3 there was moderate lymphocytosis. Dr. Souques examined

3 cases of tabes dorsalis, in all of which abundant lymphocytosis was present.

The consensus of observations made by the various investigators above named tends to establish the great diagnostic value of cytodiagnosis in organic affections of the spinal cord, and goes far to show that a syphilitic causation is pre-eminently a factor in the production of lymphocytosis in the cerebro-spinal fluid. Editorial (*Lancet*, May 30, 1903).

SPLENECTOMY, BLOOD-CHANGES AFTER.

The increase of erythrocytes may last for several months after removal of the spleen. There is no change in the percentage of hæmoglobin, however, and the increase of eosinophiles begins within a few weeks of operation and attains a rather high percentage. In a case examined five months after splenectomy the writer found, in addition, that the leucocytes doubled in number (from 5000 to 10,000) within four weeks of the operation, and gradually decreased in the next four months to 7000. The multinuclear neutrophile cells were at first enormously increased and gradually diminished in number. Within four weeks of the operation a decided decrease of white cells occurred, but without swelling of the lymphatic glands. E. Rautenberg (*Münchener med. Wochen.*, April 21, 1903).

STERILIZED MILK FOR INFANT-FEEDING.

THE DRAWBACKS TO THE USE OF.

Sterilization produces profound changes in the milk of both physical and chemical nature, and renders it difficult of assimilation. More or less prolonged feeding on sterilized milk lowers and disturbs nitrogenous metabolism and interferes with the formative processes of the organism, this being also due to the

insufficient quantity and deficient assimilation of the mineral salts which undergo a change in the process of sterilization. The excess of poorly digested and nonassimilable material irritates the intestines and disturbs their function. This leads to a poor development of the organism and prepares a favorable soil for various constitutional affections. Artificial feeding on sterilized milk should become a matter of the past. N. P. Daniloff (Russky Vrach, Feb. 15, 1903; Phila. Med. Jour., June 6, 1903).

SYPHILIS, HEREDITARY, TRANSMISSION OF.

The father's sperm-cell may contain the syphilitic virus and convey it to the child without participation of the mother. The maternal generative cell may contain the virus and result directly in a diseased foetus. The placental circulation permits the passage of the infectious matter either way from mother to child or *vice versa*. Several or all of these factors may combine, and, the more of them that are present, the less probable the escape of the child. The probabilities of the transmission of syphilis through the mother are greater because of more ways of possible influence on the foetus. The writer considers the probability of the appearance of hereditary syphilis to be reservedly proportionate to the time of infection of the parents, and to the length and thoroughness of the specific treatment. As to whether or not syphilis can be transmitted to the second generation, we must have positive evidence (1) of acquired syphilis of either or of both of the grandparents; (2) of hereditary syphilis in either of the parents with the absolute proof that no new syphilitic infection of the patients took place, and (3) of hereditary syphilis in the grand-

children. A. Schalek (Journal of the American Medical Association, May 16, 1903).

TOXICITY AND IDIOSYNCRASY.

Nothing is more disconcerting for a physician than to have a remedy, that he has given in perfect confidence of its harmlessness, produce symptoms or perhaps serious toxic effects. Needless to say, there are cases of this kind being constantly reported, however, and only a previous knowledge of the special susceptibility of the patient will absolutely protect the physician from such occurrences in his practice. It is well known, of course, that this idiosyncrasy for certain drugs is often a family trait, and, consequently, when certain substances—as quinine, for instance—are prescribed, it is advisable to ask if the patient knows of any bad effects that have occurred in near relatives. The number of drugs that may produce untoward and unintended complicating symptoms is growing with the enlargement of the materia medica, and especially with the increased use of synthetic products. Some of the recently reported incidents of this kind, as they may be gathered from Squibb's "Ephemeris" for the present year, are worth noting. Antipyrin is one of the drugs that is well known to produce unpleasant symptoms. Most of the cases reported, however, are of European origin, and serve mainly to show how much larger doses of the drug are employed with comparative impunity than are usually considered advisable with us. Simon and Mahu, of Paris, report a case of toxic hamoglobinuria following the administration of antipyrin, but as the young girl had been given 9 grams (nearly 140 grains) of antipyrin, in four hours, this is not so surprising. Doses as high as 60 to 90 grains (4 to 6

grams) during the day are not unusual on the Continent, however. Professors Curschmann and Zweifel, of Leipzig, thoroughly conservative authorities, administer from 2 to 4 grams (30 to 60 grains) of antipyrin in twenty-four hours and obtain with this more satisfactory results in the treatment of the fever of puerperal septicæmia than with any other remedy. They not infrequently see the cutaneous rashes peculiar to antipyrin administration in certain patients, but they do not consider these a contra-indication to the continuance of the drug.

Certain of the newer synthetic products have, during the past year, come under the suspicion of occasionally producing unfortunate symptoms. Several reports of this character in regard to heroin have been made. Dr. Campbell, of Liverpool, who had been in the habit of using heroin hydrochlorate in doses of $\frac{1}{6}$ grain (0.01 gram) with great satisfaction in the treatment of laryngeal cough, recently had an alarming experience with $\frac{1}{12}$ grain (0.005 gram) dose. It has been found that heroin may produce a habit for which the name heroinomania has been coined, so that recent suggestions for its use in the treatment of morphinomania will have to be taken with great caution. Aspirin, a new salicylate compound for rheumatism, has given, on one or two occasions, unexpected symptoms of collapse. Trional and sulphonal continue to be reported occasionally as causes of severe prostration and serious anæmia when their use has been continued for a considerable period without intermission. Some very interesting cases of poisoning from the use of excessive quantities (in each case a whole nut) of nutmeg are reported. The substance was employed in places so distant from each other as

England and Australia for the purpose of producing abortion. Nutmeg is well known as a sedative, especially in Germany, and is often used as a mild hypnotic, being liberally dusted over night-drinks for this purpose. There seems to be a widespread tradition as to its power as an abortifacient somewhat resembling that current in many parts of Europe with regard to the effect of phosphorus for the same purpose. The symptoms of nutmeg poisoning are those of a narcotic, though collapse, with muttering delirium, clammy extremities, almost imperceptible pulse, and somewhat dilated pupils that react feebly to light are reported. The domestic use of nutmeg as an emmenagogue and hypnotic may occasionally, in susceptible persons, give rise to some of these symptoms without more serious effects. Gangrene, especially of fingers and toes, continues to be reported as the result of applications of carbolic acid, notwithstanding the many warnings in this matter. Even such dilute solutions as 3 to 5 per cent. may produce gangrene if applied as a wet dressing. It is conceded now that this effect is due to a special susceptibility of the patient rather than to the toxic effect of the drug. It has been noted that this susceptibility is occasionally a matter of heredity, and that the physician about to employ carbolic acid in minor surgery can sometimes save himself from unexpected results by questioning the patient as to his heredity in the matter. Patients whose vasomotor apparatus is already in a disturbed condition, who have what is known as dermatographia, or who suffer from Raynaud's disease, or Weir Mitchell's disease, even in mild form, must be guarded more carefully than others against the effects of carbolic acid applied locally. Progress in neurology in

recent years shows that these affections are much commoner than formerly was thought. It is said also that turpentine produces its undesirable dermatitic effects much more readily on patients who are suffering from one of these peripheral vasomotor disturbances that have just been mentioned.

It was thought for a time that lysol, the saponified product of coaltar with certain affinities to phenol, might prove a less dangerous substitute for carbolic acid. The poisoning cases reported, however, are more frequent than before. Complications from its local application are not common; but, taken internally, the drug can be quite as fatal as carbolic acid. Acetanilid has, of course, achieved a bad eminence in the matter of producing untoward effects. Its action in the headache powders so commonly used has brought it more and more to the notice of the physician of late years as a dangerous drug. A number of cases have been reported, however, in which its use locally as a dusting-powder has been followed by rather serious symptoms. It usually produces its evil effects when used on abraded surfaces in children or the aged. When employed for the relief of the burning pain of so-called scalding in children it has several times produced affections resembling morbus caeruleus. Pyrogallol, when used locally in skin affections, still continues to be a reported source of toxic symptoms in susceptible individuals. Editorial (Journal of the American Medical Association, June 6, 1903).

TUBERCLE. THE SERUM-REACTION OF.

The writer emphasizes the negative results of the serum-reaction in tuberculosis. It may indicate (1) the absence of the particular bacterial invasion which we suspect, (2) the purely local-

ized nature of the invasion, and (3) the absence of a power of immunizing response on the part of the invaded organism. In view of the fact that tuberculous infections are, for the most part, purely localized infections, we have little reason to expect much assistance in the diagnosis of tubercle from the indications of the serum-sedimentation reaction; but, on the other hand, in connection with the serum-sedimentation reaction, the fact is important that this reaction gives, in the case in which the patient is being subjected to therapeutic inoculations of tubercle vaccine, some indication of the extent to which antibacterial substances are being elaborated in the organism. The writer contends that every patient who is submitted to antituberculous inoculation with the new tuberculin should be regularly tested by the serum-test to ascertain how he responds to each successive inoculation. By this means we can hope to be successful in dealing with localized tuberculous infection by achieving a cumulative positive phase and in maintaining a higher baseline of resistance. A. E. Wright (Lancet, May 9, 1903).

TUBERCULOSIS — CHRONIC. PARENCHYMATOUS, PULMONARY.

This form is worthy of special attention and recognition, for the following reasons: It is a perfectly characteristic type of pulmonary tuberculosis, distinctly different from those generally recognized. It is constant in its progress and bad in its prognosis. It is scarcely less fatal than florid phthisis, though its duration is longer. It is very insidious, and this tends to cause error on the part of the physician and a mistaken sense of security to both patient and medical adviser. The preceding two reasons render its early recognition of

great importance to both physician and patient. W. N. Beggs (Medical News, April 25, 1903).

TUBERCULOSIS OF THE BONES AND JOINTS, SUNSHINE AND FRESH AIR VERSUS ROENTGEN AND FINSEN RAYS IN THE TREATMENT OF.

Sunlight and fresh air, with fixation of the part, is the best treatment for tuberculosis of hard tissues; treatment by tent-life was successful both in winter and in summer; there should be established sanatoria for the treatment of tuberculosis of hard tissues; concentration of the sun's rays was beneficial in the treatment; x-rays inhibit the growth of the germ in the laboratory, but this is not definitely proved about the germ in the tissues; both actinic and x-rays were to be used as adjuncts to other methods, not as superseding them. De Forest Willard (Proceedings of the American Medical Association; Phila. Med. Jour., May 16, 1903).

TYPHOID FEVER, NEW WIDAL TEST FOR.

A loop from the faeces of the suspected case is smeared upon the surface of an agar slant in a prepared tube and sent to the laboratory. From this one or more bouillon cultures are prepared. The bouillon must react from 1 to 2 per cent. alkaline with the $\frac{n}{01}$ acid, using phenolphthalein as the indicator. The infected bouillon is now incubated at the usual temperature for twelve hours, when the examination may be made. A sample of the blood is taken at the same time with the faeces. This is mixed with the bouillon culture, and placed upon the stage of the microscope. If there is enough agglutinative material present, the typhoid bacilli, if they are there, will soon form clumps, which will be seen full of colon bacilli in active mo-

tion. If this reaction does occur, the case has advanced at least to the second week. If there is no reaction, another sample of the bouillon culture is tested with the blood from an advanced case of typhoid, whose agglutinative power has been tested by the ordinary method with a pure culture of Eberth's bacillus. In thirty-five tests of cases in the earlier stages, every case that gave a positive reaction turned out to be typhoid, while in a large number of other tests, from which no reaction was obtained, there was not one which gave even a doubtful reaction. A. J. Wolff (American Journal of the Medical Sciences, April, 1903).

TYPHOID FEVER, SOURCES AND MANNER OF INFECTION OF.

The primary cause of typhoid fever is, of course, the bacillus typhosus, and this germ must gain access to the alimentary canal. The disease cannot be produced by hypodermic injection of the bacilli, and there is no clinical proof that germs taken by the air into the respiratory organs ever produce enteric fever. Practically they are eliminated only in the urine and faeces, their occurrence in the sputum being too rare for serious consideration. Some 15 to 20 per cent. of cases will show the bacilli in the urine, and they remain there during convalescence and for some time afterward. Dosage of the relative number of bacilli necessary to cause infection is important, and must depend much upon the age and condition of the patient. Individual predisposition is both acquired and hereditary. The main source of infection is the *patient*. Could we properly treat the urine and faecal discharges of patients the disease would soon die out. Direct contagion occurs rather more frequently than is commonly sup-

posed, but even then is rare. Tracing the source of an infection is often difficult, and from the nature of the case proof is often wanting. Drinking-water is the main immediate source of the infection; yet this fact was long opposed by Pettenkofer and his school of hygienists. Water may become contaminated from contaminated surroundings, such as soil. The present conditions in this country which permit and favor a contaminated water-supply, and the questions involved in their correct solution, constitute the most urgent problem for

our hygienists to-day. Sand filtration probably promises the most hopeful means of solution. Contaminated soil may lead to infection of the patient in a number of ways, such as through the drinking water, vegetables, flies, swallowed dust, and the various food articles. Milk by becoming contaminated after leaving the cow is a very fruitful source of infection. It should be remembered, however, that the patient is the ultimate source of the disease. W. H. Welch (Trans. Amer. Med. Assoc.; Amer. Medicine, May 30, 1903).

THE CONSOLIDATION OF THE NEW YORK MEDICAL JOURNAL AND THE PHILADELPHIA MEDICAL JOURNAL.

WHILE deeply regretting that so excellent a contemporary as the *Philadelphia Medical Journal* should have lost its autonomy, we hail with pleasure the following lines, embodied by the editors of the *New York Medical Journal* in their issue of June 20th:—

“In bringing about the consolidation the publishers have not been actuated solely by a desire to enlarge the subscription list, though they do not profess to have been unmindful of the advantage to be derived from such accretion. They have cherished the far-higher purpose of combining and furnishing to an enlarged circle of readers all the features thought to be of special value in the two journals. We shall exert all possible efforts for the realization of this purpose.

“Before the consolidation the *New York Medical Journal* was free of all commercial influence, and so was the *Philadelphia Medical Journal*. Two journals more harmonious in their aims and methods do not exist; and it is most fitting, therefore, that they should so combine their resources as to further those aims and improve those methods to the utmost. This we believe to be wholly feasible under the unification of the two. Fortunately, the two cities, New York and Philadelphia, are of such ready access to each other that we apprehend no difficulty in dealing with medical matters of local interest in each city, especially as we shall maintain a Philadelphia office at which the editor will frequently be present. If New York is the larger of the two towns, and therefore presumably the scene of more events, we do not for a moment forget that Philadelphia is conspicuously glorious in the annals of medicine or that she is destined to be forever a leader in the progress of our profession. We shall see to it that she is fittingly represented in our columns.

“We have a few words in particular to say to the readers of the *Philadelphia Medical Journal*—a host of cultured and progressive physicians. They have done well to subscribe to such an excellent journal. Let us assure them that their

favorite periodical is not to be merely absorbed—snuffed out, so to speak. Though it loses its distinctive title, it will perpetuate itself as an integral part of our united publication, even as a woman, when she marries, does indeed lose her father's name, but parts with not one whit of her individuality or of her influence. We have received from the accomplished editors of the *Philadelphia Medical Journal* a clean and able journal; we shall endeavor so to sustain its excellence as to merit the continuance of its patronage."

There lies hidden under these lines a bit of history which the profession at large should not overlook: *i.e.*, the *Philadelphia Medical Journal* lost its autonomy rather than lower the ethical standing of its columns. Its career might have been considerably prolonged had its editorial staff yielded to the commercial needs of the situation. They preferred to sacrifice all the advantages accruing to them through their connection with the *Journal* rather than deviate from the strict professional lines which had stood first and foremost in the minds of its founders, and which had never been departed from.

And this does not in the least militate against the view that the lay members of the management were justified in trying to increase the *Journal's* revenues; they had shown by their liberality, their pecuniary sacrifices, that a higher motive than gain was theirs; they wished only to insure the perpetuation of what they rightly considered as a good work. But, even considering the question solely from the commercial standpoint, to depart from the *Journal's* policy would have failed in the end. It is not by artificial recommendations of this and that drug in the columns of medical journals that the interests of legitimate advertisers are subserved nowadays, for physicians recognize such material at a glance, frown upon both manufacturer and journal, and . . . do not renew their subscription to the latter. This is precisely where the *Philadelphia Medical Journal* would have met its fate, for the one great error committed by its founders was to attempt to give a large weekly for *three dollars* a year. An inadequate subscription *list* plus an inadequate subscription *price* would soon have driven the *Journal* to the wall. Instead, it has left the field with honor to all concerned, and it could not have fallen into better hands than in those of Dr. Frank P. Foster, editor of the *New York Medical Journal and Philadelphia Medical Journal, Consolidated*.

Books and Monographs Received.

The editor begs to acknowledge, with thanks, the receipt of the following books and monographs:—

SURGICAL ASEPSIS. Especially Adapted to Operations in the Home of the Patient. By Henry B. Palmer, M.D., Consulting Surgeon to the Central Maine General Hospital. Ninety Illustrations. Pages vi-231. Size, large 12mo. Extra Cloth. Price, \$1.25, net, Delivered. Philadelphia: F. A. Davis Company, Publishers, 1914-16 Cherry Street.

THE EXPECTANT MOTHER. A Treatise on the Care of the Expectant Mother during Preg-

nancy and Childbirth and the Care of the Child from Birth to Puberty. By W. Lewis Howe, M.D. Pages viii-63. Size, small 12mo. Extra Cloth. Price, 50 cents, net, Delivered. Philadelphia: F. A. Davis Company, Publishers, 1914-16 Cherry Street.

A TEXT-BOOK OF CHEMISTRY. For Students of Medicine, Pharmacy, and Dentistry. By Edward Curtis Hill, M.S., M.D. With 78 Illustrations, including 9 Full-Page Half-tone Colored Plates. Pages xii-523. Crown Octavo. Extra Cloth, \$3.00, net, Delivered. Philadelphia: F. A. Davis Company, Publishers, 1914-16 Cherry Street.

BOOK ON THE PHYSICIAN HIMSELF AND THINGS THAT CONCERN HIS REPUTATION AND SUCCESS. By D. W. Cathell, M.D., and William T. Cathell, A.M., M.D., Baltimore, Md. Eleventh Edition, Revised and Enlarged. Philadelphia: F. A. Davis Company, Publishers, 1914-16 Cherry Street.

STUDIES IN THE PSYCHOLOGY OF SEX. Analysis of the Sexual Impulse—Love and Pain—The Sexual Impulse in Women. By Havelock Ellis. Philadelphia: F. A. Davis Company, 1914-16 Cherry Street.

YEAR-BOOK OF THE UNITED STATES DEPARTMENT OF AGRICULTURE. 1902. Washington, D. C., 1903.

The Treatment of Chronic Diarrhoea. By Charles D. Aaron, M.D., Detroit, Mich. 1903. —The Subcutaneous Injection of Paraffin for the Correction of Deformities, with Report of Cases. By Junius F. Lynch, Norfolk, Va. 1902.—Methods which Render some Therapeutic Agents more Palatable. By Samuel E. Earp, M.S., M.D., Indianapolis, Ind. 1903.—The Virtue of Valerian. By Samuel E. Earp, M.S., M.D., Indianapolis, Ind. 1903.—The Physiologic Basis of Manual Therapy, and the Role of the Vasomotor Mechanism. By John P. Arnold, M.D., Philadelphia. 1903.—Some Types of Retinitis and Choroidoretinitis. By Alexander Duane, New York. 1902.—Cleanliness, the Great Secret of Surgical Success. By Carl Beck, M.D., New York. 1902.—The Pathologic and Therapeutic Aspects of the Effects of the Roentgen Rays. By Carl Beck, M.D., New York. 1902.—The Modern Treatment of Fractures of the Lower End of the Radius, as Indicated by the Roentgen Rays. By Carl Beck, M.D., New York. 1902.—The Value of the Roentgen Rays in the Treatment of Carcinoma. By Carl Beck, M.D., New York. 1902.—The Medico-legal Value of the Roentgen Rays. By Carl Beck, M.D., New York. 1902.—The Roentgen Rays in Differentiating between Osteomyelitis, Osseous Cyst, Osteosarcoma, and Other Osseous Lesions, with Scialographic Demonstrations. By Carl Beck, M.D., New York. 1902.—The Action of Strychnine on the Heart, and the Evil of Overdosage. By Roland G. Curtin, M.D., Philadelphia. 1902.—Herpes Zoster and its Relation to Internal Inflammations and Diseases, Especially of the Serous Membranes. By Roland G. Curtin, M.D., Philadelphia. 1901.—Explorative Princip und Technik beim secundären Brustschnitt. Von Dr. Carl Beck, New York.—Home Manufacture and Use of Unfermented Grape-juice. By George C. Husmann, United States Department of Agriculture, Washington, D. C. 1903.—The Control of the Codling Moth. By C. B. Simpson, United States Department of Agriculture, Washington, D. C. 1903.—Forestry and the Lumber Supply. Forestry and Foresters. By Theodore Roosevelt. The Exhaustion of the Lumber Supply. By R. L. McCormick. The Lumberman and the Forester. By Gifford Pinchot. United States Department of Agriculture, Washington, D. C. 1903.—Practices in Crop Rotation. By George K. Holmes, United States Department of Agriculture, Washington, D. C. 1902.—A Primer of Forestry. By Gifford Pinchot, United States Department of Agriculture, Washington, D. C. 1903.—Experiment Station Work, XXII. United States Department of Agriculture, Washington, D. C. 1903.—Reclamation of Alkali Lands in Egypt as Adapted to Similar Work in the United States. By Thomas H. Means, United States Department of Agriculture, Washington, D. C. 1903.—Scale Insects and Mites on Citrus Trees. By C. L. Marlatt, Washington, D. C. 1903.—A Directory for Farmers with Weather Conditions, Crop Injuries, etc., for 1902. United States Department of Agriculture, Washington, D. C. 1903.—Foods and Food-control. Parts III, IV, V. By W. D. Bigelow, United States Department of Agriculture, Washington, D. C. 1902.—A Digest of Recent Experiments on Horse-feeding. By C. F. Lankworthy, United States Department of Agriculture, Washington, D. C. 1903.—Cheese-making on the Farm. Compiled by Henry E. Alvord, United States Department of Agriculture, Washington, D. C. 1903.

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THE INDICATIONS FOR DIVISION OR RESECTION OF THE CERVICAL SYMPATHETIC IN EXOPHTHALMIC GOITER.

IN the light of our own views, the cervical sympathetic chain of ganglia occupies a position greatly exceeding in physiological importance that now accorded it. Besides acting as intermediary for the transmission of vasomotor impulses to various vessels of the head and neck, these nervous structures also serve, we have been led to conclude, to transmit efferent impulses from the anterior pituitary body

to the upper thoracic ganglia, which in turn, and through the intermediary of the splanchnic nerves, finally reach the adrenals. Biedl not only found that when the latter nerves were cut and the peripheral ends were electrically stimulated, the functions of the adrenals were enhanced, but Howell ascertained that the blood which passed through the organs under similar circumstances, contained an excess of their characteristic secretion. The impulses referred to, by thus augmenting the proportion of adrenal secretion thrown into the inferior vena cava, serve, in our opinion, to physiologically increase the quantity of adrenoxin formed at the pulmonary alveoli,¹ and to correspondingly increase general metabolism. Any agent capable of stimulating the anterior pituitary should, therefore, bring about the same result: Our investigations showed that it was the purpose of the secretion of the thyroid to continuously supply the blood with an organic iodine-laden compound (several of which have been isolated by other investigators); they also showed that this organic body maintains the functional activity of the anterior pituitary body to a given standard, thus insuring normal general metabolism in all cellular elements. Myxœdema and cretinism, in keeping with the prevailing doctrine, are thus ascribable to deficiency of thyroid secretion; exophthalmic goiter, also in accord with many clinicians, is to be ascribed to an excess of thyroid secretion. But the former means, in the light of our own views, *inhibited* general metabolism, due to the fact that this deficiency of thyroid secretion entails an inadequate supply of adrenoxin (oxidizing substance or ferment) in the blood, while the latter disease means *excessive* general metabolism throughout the entire body.

It is in exophthalmic goiter, the symptoms of which, as is well known, can also be caused by excessive quantities of thyroid extract, and also by large doses of iodine, that section of the cervical sympathetic chain, or resection of one or more of its ganglia has given, on the whole, the most satisfactory results. Can this be ascribed, as generally held, merely to the cessation of impulses transmitted *via* the ganglia to the vascular supply of the globe, including Müller's muscular cone and of the thyroid, thus arresting the primary causes of the exophthalmos and of the goiter? The well-known constrictor functions of the sympathetic filaments doubtless account for the benefit obtained from section in the case of Müller's cone, but it is evident that, if vascular dilatation of the ocular and thyroidal vessels is made to explain the presence of exophthalmos and goiter, section of their sympathetic supply can only aggravate the morbid process by giving rise to further vascular dilatation. Again, how account for the excellent results obtained by Jaboulay, for example, from simple section of the cervical sympathetic *above* the middle cervical ganglion, which innervates the thyroid? In one of his cases,² in which both nerves had been severed in this location, the goiter gradually disappeared. On the other hand, a case³ from which the superior and middle ganglia were removed by the same surgeon showed a reduction of the goiter of only one and one-half centimeters one month after the operation. It is evident, therefore, that the satisfactory results met with by this surgeon, by Jonnesco, of Bucharest, —who first resorted to resection of the ganglia,—and by others must be accounted

¹ See THE MONTHLY CYCLOPÆDIA for March.

² Cécile P., reported by M. Vignard, Bulletin Médical, page 168, February 21, 1897.

³ Marguerite D., *ibid.*, page 169.

for in some other way, especially when we consider that several symptoms other than exophthalmos and goiter are present in the disease which the supposed undue stimulation or irritability of the cervical sympathetic ganglia do not explain.

The beneficial effects of the operation seem to us but a natural consequence, however, when the anterior pituitary body and the adrenals are accepted as factors of the morbid process. The inordinate activity of the thyroid gland, by entailing excessive stimulation of the anterior pituitary, causes the latter to overstimulate the adrenals through the intermediary of the sympathetic ganglia. The excess of adrenal secretion causing a corresponding increase of adrenoxin in the blood, all the phenomena of excessive and prolonged metabolism are engendered: *i.e.*, those grouped under the term "Exophthalmic Goiter." Adrenal overactivity is thus exemplified by: (1) the cerebral hyperoxidation, as manifested by headache, irritability, hallucinations, etc.; (2) the unusual muscular metabolism, as shown by the fatigue, tremor, the inordinate cardiac activity, general emaciation, and the excessive activity of Müller's cone, and other ocular muscles—the source of the exophthalmos; (3) the contraction of all vessels supplied with a muscular coat, and consequent engorgement of the peripheral capillaries (none of which are supplied with such a coat), as manifested by cutaneous flushing, erythema, purpura, epistaxis, and hæmoptysis. To sever the connection between the anterior pituitary body and the adrenals, therefore, is to arrest the *excessive* flow of adrenal secretion: *i.e.*, all these manifestations of hyperoxidation.

But why do not all cases of exophthalmic goiter yield to the operation? A number of cases have been recorded in which a rapid lethal course followed a period of temporary relief. The symptomatology of such cases clearly points to the morbid process involved. In a case reported by Peugniez,⁴ for instance, the symptomatic triad,—double exophthalmos, goiter, and tachycardia,—was accompanied by *profuse sweating*, one of the initial signs of the *cachectic* stage of the disease: that stage when excessive and prolonged overstimulation of the anterior pituitary body and, through it, of the adrenals has finally caused these organs to lapse into insufficiency. The immediate effects of the operation were good, since the *erethic* stage had not quite ceased. Twenty-five days after leaving the hospital, however, the patient—a girl of twenty years—succumbed to what Dr. Peugniez termed "galloping cachexia." In a case of Jaboulay's⁵ the predominant symptom of the approaching crisis was œdema of the lower extremities. This was another instance of excellent *surgical* recovery—but followed by death sixteen days after the operation. In such cases lowspiritedness and melancholia, weakness, stumbling, general pallor, colliquative diarrhœa, sweating, air-hunger, and other familiar symptoms distinctly point to the cachectic condition: *i.e.*, to failure of the whole adrenal system—as shown in some instances by the presence of bronzing. To sever the cervical sympathetic cord or to remove either of its ganglia, under such circumstances, hastens the fatal issue.

In the light of our own views, therefore, it is only during the *erethic* stage of exophthalmic goitre that cervical sympatheticectomy is indicated.

C. E. DE M. SAJOUS.

⁴ Gazette Médicale de Picardie, November, 1898.

⁵ Presse Médicale, February 12, 1898.

Cyclopædia of Current Literature.

ACHOLIA.

Absence of bile due to interruption of the functions of the liver and possibly those of the pancreas causes the stools to present the following appearances: They are greasy; in some instances the fat standing on the surface is so thick that they glisten like talc and on analysis are found to contain enormous excess of fat—from 24 to 63 per cent., the normal being 11 to 12 per cent.: *i.e.*, from two to more than five times the normal quantity. The stools are also acid or slightly alkaline only, and are extremely offensive, presumably from decomposition of fats owing to the absence of bile, which is known to have antiseptic powers and arrests fermentation. The stools are large in volume, out of proportion to the food taken, indicating imperfect digestion and absorption. The patient wastes rapidly, and in protracted cases becomes greatly emaciated, white, flabby, and anæmic. In all cases bile-pigment is deficient and in extreme and typical cases, where the stools appear white, no trace of it can be found. Moreover, in the more marked cases the bile-acids may be entirely absent. In the case of sprue the results of different observers in this respect are contradictory. The effect of the administration of ox-gall in producing green coloration of the stools points to the absence of this being the cause of absence of color. Although the urine has only been fully examined in two cases, in one urea was largely deficient (only 0.45 per cent.) and in another in excess, and crystals of leucin were observed, this being indicative of imperfect liver-function. W. B. Cheadle (*Lancet*, May 30, 1903).

AMAUROSIS OF LEAD COLIC, URÆMIA, AND ECLAMPSIA, HIGH BLOOD-PRESSURE IN.

The one condition common to the temporary disturbances of vision which may occur in lead colic, uræmia, and eclampsia is high blood-pressure, and not, as has been supposed, uræmia, for in lead poisoning and eclampsia there may be no albuminuria or other sign of nephritis. In this transitory amaurosis the pupils usually react normally, and the fundus is unchanged.

1. In lead poisoning, though amaurosis has long been recognized, there are only about 8 reported cases in which the fundus was examined. In all these the amaurosis appeared during an attack of colic. The pupillary reaction was present in 6, but absent in 2. The retina was normal in all but 1 case (that of Elschnig), in which there was spasm of the retinal arteries. The following case is typical: A man, aged 41, who had repeated attacks of lead colic, and had a blue line on the gums, was suddenly, on February 8th, seized with colic, headache, anorexia, and constipation. The pulse was 78 and the blood-pressure (taken with the tonometer) 160 millimeters of mercury. The urine contained neither albumin nor sugar. Six days later amaurosis appeared. The optic discs were pale, and the retinal vessels tortuous, but otherwise normal. Under iodide of potassium the blood-pressure fell and vision returned; it was normal when the blood-pressure reached 120 millimeters. The man was discharged cured with a blood-pressure of 75 millimeters. The rise of blood-pressure during lead colic is probably due to

spasm of the abdominal—and especially the intestinal—vessels. As temporary amaurosis occurs only during the attack of colic and disappears with it, it is probable that the amaurosis is due to high blood-pressure.

2. Uræmic amaurosis of the transitory type, with intact optic fundus and retained pupillary reaction, usually occurs during the rise of blood-pressure which invariably precedes an attack of uræmia. Thus, a man, aged 29, with oldstanding aortic regurgitation of rheumatic origin, had acute nephritis with scanty urine. The blood-pressure was 220 millimeters and later rose to 240 millimeters. Amaurosis then appeared suddenly, and was followed by convulsions. Some improvement followed the lowered blood-pressure produced by an injection of morphine. Then 300 cubic centimeters of blood were abstracted by venesection and the arterial pressure sank from 210 millimeters to 170. Vision returned, the amount of urine increased from 400 to 3300 cubic centimeters daily, and, though the nephritis persisted, the man felt in good health.

3. In puerperal eclampsia transitory amaurosis may occur whether nephritis is present or absent. But before the appearance of convulsions there is constantly a rise of blood-pressure. Amaurosis frequently appears in this preconvulsive stage, and is placed by Schauta among the prodromata of eclampsia. Rarely convulsions may be absent, the blood-pressure falling after the appearance of amaurosis. The changes which produce transitory amaurosis are probably situated in the occipital lobes, and consist, as the atypical case reported by Elschnig indicates, in contraction of the vessels. How this contraction and consequent cerebral anæmia are produced is uncertain, since an experimentally pro-

duced rise of general blood-pressure is followed by cerebral hyperæmia. J. Pal (*Centralblatt für innere Medicin*, April 25, 1903).

AMÆBIC DYSENTERY IN INDIA.

Amœbic dysentery is most frequently found in patients dying from large, tropical liver-abscess, in the walls of which amœbæ can always be found, unless they have been opened for some time. The disease is chronic, and often latent, and not very often fatal by itself, but usually through complications. Amœbic dysentery has naked-eye and microscopical characters which enable it to be very easily distinguished from the more common bacillary type of the disease. Its most important complications are large abscess of the liver, chronic or acute peritonitis, and postperitoneal abscess. Amœbic abscess of the liver secondary to this form of dysentery may be produced by infection across the peritoneum, with or without previous adhesions, or through infection by the portal vein, producing sufficient clotting in its branches to cause a focal necrosis in one or more parts of the liver, concentric extension taking place by means of a similar process. If staphylococci reach the liver with the amœbæ, as especially occurs when gangrenous sloughing of the bowel-wall complicates amœbic dysentery, then multiple small abscesses in the interlobular staphylococci result. The bacillary form of dysentery is much commoner in Calcutta than the amœbic one, and is due to Shiga's bacillus, which is clumped by the blood of cases of ordinary dysentery, although not by that of the amœbic form, this furnishing a method of differentiation between them clinically. Leonard Rogers (*British Medical Journal*, June 6, 1903).

ARTERIES, CALCIFICATION OF MIDDLE COAT OF.

The writer examined 130 subjects to determine the frequency of this alteration of the arteries of the extremities and its relation to arteriosclerosis. Instead of its being a rare occurrence, he found pure media calcification in 55, with or without arteriosclerosis of the deep-seated arteries, and in 18 the sclerosis involved the peripheral arteries also. In 57 there was pure arteriosclerosis alone. Thus, the media calcification occurs more frequently than arteriosclerosis, and is evidently often mistaken for the latter. Its degree and extent are no criteria for or against accompanying arteriosclerosis of the central vessels, as either may occur alone. The femoral artery is the one most frequently involved and chiefly affected by the calcifying process, and is sometimes the only one. In 12 of his subjects no other vascular affection could be discovered. The ages of his subjects ranged from 47 to 79 years, and the list included workingmen, clerks, sailors, artisans, etc.—both indoor and outdoor workers. There were no special alcoholic or venereal antecedents except in 2 and no chronic affection in any. Smallpox, cholera, dysentery, and malaria were noted in the history of 1 case each, cancer in 4, and tuberculosis in the same number. J. G. Mönckeberg (*Archiv f. path. Anat., Phys., u. klin. Med.*, vol. clxxi, No. 1, 1903).

ATROPINE, TO AVOID INCONVENIENCES OF.

Methyl atropine, in the form of a 1-per-cent. solution of the hydrobromate, induces in emmetropic eyes a dilatation of the pupil maximal in thirty to thirty-five minutes. It diminishes in twelve hours and vanishes during the second day. Its

disappearance can be accelerated by instillation of an eserine collyrium. The writer prefers to use it in the formula of 0.05 gram of methyl atropine hydrobromate with 0.1 gram of cocaine hydrochlorate in 10 grams of distilled water. One drop induces the maximal dilatation in thirty-five to fifty minutes, with brief paresis of accommodation, not noticeable in myopia and emmetropia. The methyl atropine is free from the drawbacks of atropine, and is especially indicated for the diagnosis of incipient iritis when glaucoma is feared, also for the accurate determination of the static refraction, and for all cases in which dilatation of the pupil is required for ophthalmoscopic examination. Sarier (*Bulletin de l'Acad. de Méd., Paris*, May 5, 1903; *Jour. Amer. Med. Assoc.*, June 20, 1903).

BLADDER, CONTRIBUTION TO THE PATHOLOGY AND PROGNOSIS OF THE DISEASES OF THE.

The most frequent causes of diseases of the bladder are: (*a*) lesions of the central nervous system, causing dilatation, (*b*) septic processes of various kinds, and (*c*) hypertrophy of the prostate. In all conditions in which the spinal cord or central nervous system is involved frequent and early catheterizations should be resorted to, to prevent the bad effects of excessive distension or the possibility of cystic rupture. Conditions of the bladder must greatly modify the prognosis in operative proceedings for the relief of obstructions of the urinary flow; therefore the importance of cystoscopic and other examinations cannot be too strongly insisted upon. Hypertrophy of the bladder-wall is due to four different processes, separate or combined: (*a*) inflammatory infiltration, (*b*) increase of the fibrous connected tis-

sue, (*c*) smooth muscle hyperplasia, and (*d*) infiltration by new growth. The clinical symptoms in hypertrophy of the bladder depend on which of these factors predominates. R. H. Greene (Medical News, June 20, 1903).

BLOOD, REGENERATION OF THE.

The writer concludes that basophilic granules and polychromatophilia appear especially in the convalescence of anæmias at a time when the general condition improves. This improvement occurs in anæmias of toxic and of traumatic origin, as well as when a loss of blood has taken place. Experimentally, if a rabbit's ear is shut off from the general circulation after the injection of a blood poison, the basophilic granules appear everywhere except in the ear in from sixteen to eighteen hours. In many cases of experimental anæmia, as well as in human anæmias, all stages can be observed in a single blood-cell, from gross nuclear changes to the finest dust-like granules. In some cases of experimental anæmia the granules can be observed exclusively in the nucleated red blood-cells. Basophilic granules and polychromatophilia can be seen physiologically in the blood of newborn animals and in embryos of advanced development, while at the same time nuclear rests and many normoblasts are visible. The proof that polychromatophilia arises from a solution of the granules can be made experimentally, in that the blood of an animal which contains many basophilic granules shows a decided diminution of the granules after the injection of alcohol or hydrochloric acid, while there is a decided increase in the polychromatophiles; the same experiment on animals not possessing basophilic granules evokes no increase in the polychromatophilic cells. About three-

fourths of all nucleated cells or at least the greater number of those retaining a larger portion of their nuclei, as well as embryonal blood and the blood of the marrow, is polychromatic. In consideration of all these factors it is evident that the basophilic granules are derived from the nucleus and represent a regenerative process, and that the polychromatic faculty of the red blood-cells arises, in the majority of instances, from the dissolved nuclear substance mixed with hæmoglobin. In other words, the basophilic granules and the polychromatosis are young forms of blood-cells and represent the regeneration of the blood. P. Schmidt (Münchener med. Wochen., March 31, 1903; New York Medical Journal, May 23, 1903).

BLOOD-SERUM, HUMAN, THE BACTERICIDAL ACTION OF.

Experiments conducted with the blood-serum of healthy human subjects have been made by the writer in order to determine not only the actual bactericidal properties, but also whether there is any relation between this property and the course and severity of the disease. It was found that the serum of adults possesses strong bactericidal action when directed against typhoid bacilli and cholera vibrios, but only a weak action against anthrax. E. Lowenstein (Deut. Archiv f. klin. Med., vol. lxxvi. Nos. 1-3; Medical News, July 11, 1903).

BREAST-FEEDING FROM AN OBSTETRICIAN'S POINT OF VIEW, OBSERVATIONS ON.

It is often solely the idiosyncrasy of the child, not always the quantity or quality of the breast-milk, which prevents successful breast-feeding. The idiosyncrasy may be along the line of a dyscrasia inherited from parents, sub-

ject to what is known as the uric acid diathesis. It is not fair to the infant to allow it to remain sick and in distress because of a paltry ounce or two which it manages to gain in the course of a week, just to have it breast-fed. A careful study of the child should be made in all cases when the signs of indigestion appear shortly after birth. And when possible a milk analysis should be performed many times to clear away, if may be, some of the doubts which arise. In large cities, where municipal laboratories exist, the assistance of an expert chemist in the study of human breast-milk would be of infinite value to the profession, desiring to lessen this one-tenth death-rate of infants during their first month of life, and to the busy obstetrician who has no opportunity of becoming an analytical chemist. E. V. Davis (*Journal of the American Medical Association*, June 20, 1903).

CALCIUM CHLORIDE IN HÆMORRHAGE.

In numerous instances this drug has yielded most excellent results in the control of bleeding. As is well known, it is relied upon by Mayo Robson and others as a valuable means of forestalling chronic hæmorrhage in gall-bladder surgery. Yet the latest works on therapeutics make no mention of it, and it has received but scant mention by the profession at large. Certain writers have even disputed its efficacy. The writer reports a case of a woman who entered his wards with profuse hæmorrhage. Circumstances prevented operation at the moment and calcium chloride was prescribed. Several hours later the resident physician summoned the writer in haste under the belief that she had sustained an inversion of the uterus. A firm, pear-shaped body was found to be protruding several inches from the

vulva with blood still trickling over its surface. On examination the tumor was found to consist solely of concentric layers of coagulated blood, which had grown as a stalactite grows—by successive depositions. Since the coagulum had formed only after the exhibition of the calcium salt, the experience may be taken as going to prove the efficacy of the chloride of calcium in raising the coagulability of the blood. J. C. Reeve (*American Gynæcology*, April, 1903).

CARDIO-VASCULAR LESIONS IN CHILDREN OF TUBERCULOUS PARENTS.

The taint in the progenitors, infectious or toxic (especially tuberculosis) entails on the children a liability to congenital hypoplasia of ovular or ontogenetic origin, affecting the tissues which have a common blastodermic origin. When the cardio-vascular apparatus is affected, the lesions are distinguished by the prolonged latency—the consequence of the extreme tolerance of the organism for the lesions to which it seems to have adapted itself before birth. The revelation of their presence comes late, usually on account of some stress which upsets the balance established between the organism and the system marked by hypoplasia, or under the influence of some intercurrent infection or intoxication which brings into evidence its primal insufficiency. This latency is particularly striking when compared with the symptoms from acquired lesions of the same localization which are so often the cause of grave functional disorders almost from the start. This fundamental difference indicates the prognosis and the therapeutics. The lesions are not tuberculous in nature. The subjects are frequently free from the slightest tuberculous lesion and do not seem predisposed to them nor rendered immune against

them. Early or late, however, the manifestations of this "paratuberculous heredodystrophy," as the writer calls it, become apparent, but the chlorosis, pure mitral stenosis, stenosis of the pulmonary artery or aorta, and diffuse arterial aplasia, alone or combined, have each their special features which allow them to be differentiated from acquired lesions. E. Mosny (*Jour. Amer. Med. Assoc.*, July 18, 1903; from *Revue de Méd.*, vol. xxiii, No. 4, 1903).

CEREBRAL COMPRESSION, BLOOD-PRESSURE IN.

Varying degrees of rapid increase in intracranial tension produce disturbances in the intracranial circulation. To these circulatory disturbances the symptoms of compression are solely due. The condition known as acute cerebral compression may be conveniently subdivided into four stages, dependent on the degree of circulatory alteration which has been reached. Each of the stages has its own more or less characteristic symptom-complex. The major or underlying symptoms originate in the centers situated in the medulla, and are only called out when the degree of intracranial tension begins to approach the arterial tension so that anæmia is threatened. A circulatory condition in the medulla which borders on anæmia has the effect of stimulating the vasomotor center. Thus, a rise in blood-pressure is occasioned which restores the local circulation. The extent of this rise may be taken as an indication of the degree of advancement of the compression. Beyond a certain point, however, this reaction cannot take place. The vasomotor center under these circumstances fails, and the respiratory efforts cease entirely. In conjunction with other symptoms, a progressive increase in ar-

terial pressure or a high degree of the same, which has been already reached, or a pressure which exhibits from moment to moment great alterations in level may be taken as a certain indication of the advisability of early operative intervention. In case there are localizable symptoms the site of trepanation is plainly indicated. In case of generalized compression from widespread hæmorrhage when there are no localizing indications, the intracranial tension should be relieved by the elevation of a large osteoplastic flap from one hemisphere or the other, with a corresponding opening in the dura. Harvey Cushing (*American Journal of the Medical Sciences*, June, 1903).

CHLORIDE OF SODIUM.

Chloride of sodium is the curative principle of all the many medicinal baths that are advertised. One pound of salt added to 3 or 6 gallons of hot water gives a seawater or Hot Springs bath at home. In shock it need not from necessity be injected into a large vein, as has been advised, but can be injected into the cellular tissue beneath the skin with good results. Rectal injections often give relief, and are invaluable in the treatment of any disease where there are anæmic conditions.

Pliny spoke of the value of salt. Pliny observed its wonderful influence upon grazing animals and appreciated what a great benefit it would be to man. By mixing salt with various oils it was also used for the stings of insects. It can be used as a wash for sore throat, ulcers, etc. The author has demonstrated to himself and others, time and time again, that lavage with hot salt water and high colonic flushings with the same are a cure for not only acute and chronic gastro-intestinal catarrh, but many other

anæmic conditions as well. He can call to mind many prisoners who were suffering from what is called general prison anæmia that were cured and became fleshy under hot salt-water lavage, colonic flushings, and orificial treatments.

For the purpose of treatment the administration by the mouth is not as curative as is the hypodermic method. For incipient phthisis, for acute or chronic pneumonia, and for many chronic diseases with anæmic tendencies a hot solution of chloride of sodium given with a hypodermic syringe will cure when all other methods fail. The strength of the saline solution should depend on the case under treatment. Nothing but distilled water should be used. A warm solution of salt water may be injected into the cellular tissue of the abdomen three or four times a day. At first 5 grains of sodium chloride is used for each injection, repeating four times a day. The dose can be increased or diminished as required. Several cases under observation improved rapidly by the hypodermic injection of chloride of sodium. Only the purest drug should be used, and for success the physician should have the assistance of some reliable chemist. Personal investigations led to the belief that we have a wonderful remedy in the simple chloride of sodium. B. S. Horne (Cincinnati Lancet-Clinic, July 4, 1903).

CHLORIDE OF SODIUM IN SCROFULA.

The writer finds that, in the condition recognized under the term "scrofula," chloride of sodium enhances the appetite and increases, judging from the results attained, the flow of salivary, gastric, biliary, and pancreatic secretions, and, moreover, assimilation. It raises the activity of metabolic processes and particularly the combustion of albumi-

noid bodies. He quotes the view of Coze to the effect that this salt opposes the loss of phosphates, and refers to the well-known influence of chloride of sodium upon endosmosis and exosmosis, and the bearing of these processes upon the integrity of the functions of the lymphatics. The effect upon the blood is also marked: the erythrocytes are increased in number and the proportion of hæmoglobin is augmented. On the whole, it acts as would a powerful tonic. The writer has used with success the following combination recommended by Coze:—

R Sodium chloride, 1 $\frac{1}{2}$ grains.
Calcium phosphate, 3 grains.
Calcium carbonate, $\frac{1}{6}$ grain.

This represents a single dose. This should be administered four times a day, after meals. Liégeois (*Journal des Praticiens*, vol. xvii, No. 11, 1903).

CORROSIVES, POISONING BY.

The action of corrosive poisons is dependent on their chemical action. Their antidotes should be selected with the mode of action or the poison clearly in mind. The writer emphasizes the importance of immediately diluting the poison with a large quantity of water, irrespective of the nature of the corrosive. Leaving arsenic and the halogens for separate consideration, the author divides the corrosive poisons into three groups: (1) the mineral acids, (2) the caustic alkalies, and (3) the coagulants. The latter include carbolic acid, copper sulphate, mercuric chloride, silver nitrate, and zinc chloride. The treatment of poisoning by any of the substances under consideration resolves itself into, first, diluting the poison as rapidly as possible; secondly, administering the proper antidote; and, thirdly, attempt-

ing to remove the injurious substance by the production of emesis. Eli H. Long (Medical News, June 27, 1903).

DIASTOLIC MURMURS WITHOUT LESIONS OF THE AORTIC OR PULMONARY VALVES.

Diastolic murmurs without organic valve-lesions are not uncommon in connection with dilatation of the aorta, localized or diffused. One of the writers' cases seems to be of this type. When the pleura and pericardium are adherent, owing to tuberculosis or other causes, diastolic murmurs are occasionally audible in the præcordia. Such murmurs are notably affected by respiration and by position; they are probably due, in most cases, to suction or pulsion exerted by the heart upon portions of lung adherent to the pericardium ("cardio-respiratory murmurs"). In cases of intense anæmia, when the red cells are reduced to or below 1,000,000 per cubic millimeter, one occasionally hears diastolic murmurs not to be explained by permanent dilatation of the aortic ring nor as "cardio-respiratory murmurs," and not due to a diastolic accentuation of a venous hum. The cause of these murmurs is obscure. Cabot and Locke (Johns Hopkins Hospital Bulletin, May, 1903).

DIET IN PREGNANCY, THE INFLUENCE OF.

The size of the offspring depends very directly upon the diet and nutrition of the mother during pregnancy. While this explains the easy labors among the healthy lower classes and confirms Prochownick's conclusion that by dieting the mother the children of rickety women may be so reduced in size as to be viable, it also probably helps to explain the very high infant-mortality among the very

poor. The infant starts life at a low level and readily succumbs to the hardships to which it is too often subjected.

To the physiologist the point of chief interest seems to be the demonstration of the limitations in the extent to which the tissues of the mother can be utilized for the construction of the embryo. The nourishment of the maternal tissues seems to take precedence over the nutrition of the fœtus. Were this not the case, had the embryo the prior claim to nourishment, we should find that in badly nourished mothers each gram would produce a greater proportionate weight of young than in well-nourished mothers. This is exactly the reverse of what occurs. The mother thus appears to pass on the *surplus* nourishment to the fœtus, and, the better the nutrition of the maternal tissues, the greater is the growth of the young *in utero*. D. Noel Paton (Lancet, July 4, 1903).

ECZEMA AS A CUTANEOUS REACTION.

In a lecture delivered at the Hospital Broca-Pascal the author reviews again the position of eczema, which is at present somewhat anomalous. For a time the idea of a pathogenic microbe of eczematous eruptions, so strongly advocated by Unna, seemed to account for them; but unfortunately this theory has not been confirmed by precise observations, and must be abandoned, at least provisionally. But, if we apply ourselves to the clinical analysis of facts, we perceive that true eczematous eruptions arise now in consequence of external irritations; again, from various intoxications, autointoxications, organic diseases, nervous shocks, etc. The most divergent causes appear to possess the power of evoking them. When one studies the pathology of human beings, not merely at one period of their existence,

but through a series of years, one remarks that such nearly always exhibit one or more tendencies toward certain morbid manifestations. These may be similar during life, which is rare, or they may vary at different eras. The individual is predisposed to such and such ailments, and these display the imprint of his personality. Under the influence of many circumstances, chill, overwork, autointoxication, accidental intoxication, etc., he has an attack of asthma, of rheumatism, an outburst of boils, or of urticaria; these are his diseased reactions. But a diseased cutaneous reaction cannot be compared to a well-defined disease.

While it has no fixed etiology, it has a precise symptomatology, as the wheal of urticaria. A true disease has a precise etiology, but a variable symptomatology, as, for example, leprosy. It is necessary, therefore, to restrict the signification of the term eczema to a well-defined cutaneous lesion, from the objective point of view, and presenting always one identical elementary lesion, the typical vesicle, as its pathognomonic characteristic. We are thus disposed for the moment to view true vesicular eczema as a pure cutaneous reaction. It would, indeed, be much simpler to admit the parasitic theory, but every effort has failed to find a pathogenic microbe in the unopened vesicle of eczema; hence to accept it just now would constitute a perversion of actual scientific truth. The hypothesis of cutaneous reactions is, on the contrary, a mode of interpreting the clinical facts. While perhaps it does not explain much, it has the appreciable advantage of facilitating the grouping of skin diseases hitherto unclassified and of elucidating their close relationships. The varied reactions which occur at different periods of life from in-

fancy to old age are only the indications that the skin, when that is the organ implicated, is the *locus minoris resistentiæ* of the organism, either because it is injured after some particular fashion or is infected by pathogenic microbes, or under the influence of causes yet unknown or ill defined; it is, for the moment, the weak point of the economy.

We may therefore conclude that there are cutaneous affections characterized from the objective side by vesicles of special aspect. We assign to these the designation of true eczema, whatever may be their duration, whatever be their ulterior evolution, whether they develop from the outset on a skin which is, so far as appearance goes, primarily healthy, or whether they are superadded to another pre-existent integumentary disorder. It cannot be too frequently repeated that all the causes which seem, to some authors, sufficient to explain the pathogeny of the eczematous eruptions are, in reality, only exciting ones—are but the secondary agents which determine the explosion. They are not essentially pathogenic of eczema, since in individuals not prone to react after the eczematous type they do not provoke morbid phenomena of that kind.

The physician dealing with an eczematous subject, to do useful work, ought to study his patient thoroughly, to analyze his hereditary and personal antecedents, to examine into the state of his gastric and urinary chemistry, to investigate his dietary, his mode of life, his moral condition, the plight and the working of all his organs. It is only then he can proceed to treat him. The end proposed is simple enough; unfortunately it is not easy to attain in the majority of instances. He should endeavor to direct him toward a normal tone, and to accomplish that it is gen-

erally necessary, before everything, to regulate his diet and mode of living. In acute crises he will begin by washing out his patient during a period of some days—that is, to submit him to a dietary of milk with Vichy water, to diuretics, and at the same time to administer once, if not twice, daily copious enemata of boiled water. If the milk regimen is inapplicable, then an absolute vegetarian diet, with water as a beverage. Coincidentally he must impose moral rest in a pure atmosphere; if possible, send him to the country, or, better still, to an altitude appropriate to his constitution. With such a program it is often astounding to see eruptions, to appearance the most intractable, disappear with corresponding rapidity, provided that suitable nonirritant local applications are selected—those which protect the skin against all direct injury, which, in a word, put it in the best possible circumstances to enable it, by itself, to recover without obstacle. Brocz (*Edinburgh Med. Jour.*, July, 1903; from *Ann. de Derm. et de Syph.*, March, 1903).

EPICARIN.

This is a condensation product of creotinic or creosotinic acid and betanaphthol, which combines the properties of creosote and naphthol, first brought into notice some years ago by Kaposi.

In epicarin we have an important addition to the means of combating ringworm of the scalp. Used preferably in the form of a tincture of 10- to 20-per-cent. strength and after epilation, it appears to act more rapidly than any of the remedies heretofore employed in restoring the hairs to a normal condition. In ringworm of the body the tincture seems to be irritating and slow in action. The ointment acts better, but is not equal to the ammoniated mercury oint-

ment nor to most of the remedies ordinarily employed. In a single case of favus the result of the use of epicarin was such as to encourage trial. In scabies, so far as our experience goes, epicarin in the form of the tincture and simple ointment is apt to prove very irritating, and is by no means equal to the sulphur and naphthol nor to the other ointments ordinarily employed. A. Van Harlingen and H. K. Dillard, Jr. (*American Journal of the Medical Sciences*, June, 1903).

EPILEPSY, THE CURABILITY OF: STUDY OF THE STATISTICS.

Of 366 cases, chiefly derived from the outpatient records of the National Hospital for the Paralyzed and Epileptic, only cases of genuine idiopathic epilepsy which had been under constant observation and treatment for a period of at least two years were taken, all cases of symptomatic epilepsy, or cases otherwise complicated, being, as far as possible, eliminated. The cases were divided into three series, according as they have responded, successfully or otherwise, to treatment: arrested, improved, and confirmed cases. The influence of the various conditions modifying prognosis are mentioned in detail, the results of the observations being stated in the percentages.

A family history of epilepsy is found more frequently among those who have become confirmed epileptics, but an hereditary history of epilepsy does not necessarily militate against the prospects of arrest or improvement of the disease in any given case. The age at the onset of the disease has an especial bearing on the prognosis. The most unsatisfactory cases are those in which the disease commences under 10 years of age; they show the smallest percentage of recoveries and

the largest of confirmed cases. If the disease arises between 15 and 20 years of age, an almost equal percentage of arrested and confirmed cases may be expected. The greatest percentage of confirmed cases is found among those in whom the disease begins between 25 and 35 years of age, from which time onward there is a steady increase in the expectations of arrest and diminution in the number which become confirmed. The duration of the malady influences the prognosis to the extent that arrest or improvement is much more likely during the first 5 than during the second 5 years. Cases, however, may be arrested even after a duration of from 20 to 30 years. The greatest percentage of confirmed and the lowest percentage of arrested cases occur in those epileptics who are subject to daily or weekly attacks, while, conversely, the smallest percentages of confirmed and the highest of arrested cases occur in those whose fits are as infrequent as once or twice a year. The character of the seizures influences the prognosis to the extent that the major attacks are the most tractable; then follow combined major and minor seizures; and, last, the minor attacks occurring alone. Marriage exerts little, if any, influence on the epileptic fits. Some patients are relieved and others are made worse. In the majority of cases the disease remains unaffected. Pregnancy has little influence on the seizures; at the best there may be only a temporary respite. On the other hand, the puerperium would seem to be especially favorable for the recurrence of fits, while lactation also is not without an exciting influence in their production. The common incidence of epileptic fits is an irregular periodicity. There are types, however, which have been described as "increasing" and "decreas-

ing," according as the fits increase or decrease in number in a definite period of time, or in which there is a shortening or lengthening of the intervals between the fits. A case of increasing type may by treatment be converted into one of the decreasing variety. Long remissions, induced either by successful treatment or by spontaneous cessation of the fits, sometimes lasting for several years, are not unusual in epilepsy; they are of favorable prognostic value, but are not synonymous with a cure of the disease. From the collected statistics a period of remission for at least nine years has been fixed as the basis on which a cure of epilepsy may be established. With this definition of a cure the author regards 10.2 per cent. of epileptics as curable. There are some cases of epilepsy which may be regarded as belonging to a curable type of the disease. These present little or no mental impairment, notwithstanding that fits may have existed for a long period. In the cases in which arrest took place, cessation of the fits occurred within the first year of continuous treatment in over 50 per cent. William A. Turner (Lancet, June 13, 1903).

ETHER, THE IGNITION OF, IN PRESENCE OF A CLOSED ELECTRIC LIGHT.

The writer reports the following unusual experience: "On the 19th of January, while engaged in a tedious and difficult operation at one of the hospitals in the city my attention was taken from my work by a sudden flash of light and some quick movements on the part of the anæsthetist, and I found that the ether-vapor had ignited, scorching the hair and eyebrows of the patient, and had burned the skin on his forehead sufficiently to cause quite a marked redness. The anæsthetist reported that,

the patient being on the face, he was unable to see the pupil properly, and he had turned on the electric light in order that he might more readily note the reaction of the pupil. The blaze had resulted coincidentally with the turning on of the light. There was no exposed fire or blaze in any part of the operating-room, and the only conclusion that we could arrive at was that the vapor of ether had ignited from the spark in the electric-light burner made when contact took place in the turning on of the light. I had never seen reported or heard of such accident taking place during the administration of ether, and it may occur again. This being the case, it is well for any surgeon or anæsthetist not to turn electric lights on or off near the vapor of ether, particularly when the room is small and there is a large amount of the vapor of ether in the room, as one can easily see what serious damage might result.

"I would also state that it is not so easy to produce a blaze by the turning on of an electric light in the presence of ether when we try it for that purpose. Since this occurrence, I have tried the experiment several different times in different ways, with the same burner and others, and have been unable to produce a blaze with ether-vapor; so that, while it is possible that this experience may be unique, and is certainly of rare occurrence if not unique, yet every surgeon and anæsthetist should bear in mind the fact that it has occurred. Fortunately, in this case the anæsthetist was prompt in his actions, and no damage was done, but very serious consequences might easily have resulted if the anæsthetist had lost his head." D. H. Murray (*New York Medical Journal and Philadelphia Medical Journal, Consolidated*, June 27, 1903).

EXOPHTHALMIC GOITER, THYROIDECTOMY AND SYMPATHETICECTOMY FOR.

The surgical treatment of this condition has excited much interest of late, owing to the fact that medical treatment failed in many cases, although the writer believes that, if the disease has not progressed too far and the patient's circumstances are such as to permit systematic treatment for a sufficient length of time, rest, hygienic measures, and proper medication will generally produce a cure, or at least hold the symptoms in check, but there are many cases amenable to surgical treatment that cannot be cured by medicine. However, this treatment is not unattended by dangers, especially acute exacerbations of the symptoms known as thyroidism, which is just as liable, however, to be produced by operation in any other part of the body.

The various operative measures which have found favor are: 1. Thyroidectomy of one-half of the gland. Resection of a smaller portion and enucleation of the situs of the tumor appear to be much more dangerous in these cases on account of the greater danger of hemorrhage (Kocher). 2. Ligation of the arteries. 3. Erythyropexy. 4. Excision of the sympathetic nerve or partial or total excision of the cervical ganglia. In conclusion, the author states that exophthalmic goiter could be cured by both thyroidectomy and cutting of the sympathetic, a perfect result being secured in about 60 per cent. of the cases of thyroidectomy, and an immediately good result appears to be the rule in excision of the sympathetic. Sufficient time has not elapsed to judge of the permanence of the cure, but the immediate results are far superior to those of thyroidectomy. The relative mortality of the two would seem to favor excision of the sympa-

thetic (Kocher, 4 deaths in 59 cases of thyroidectomy and ligation only; Jonnesco, no deaths in 14 cases of bilateral excision of the sympathetic), although in his own cases the result is the opposite. Local anæsthesia should be employed, and excision of the sympathetic should be performed only on one side at a time, a sufficient time being allowed to elapse for the patient to recover from the effects of the first operation. B. Farquhar Curtis (*Trans. Amer. Surg. Assoc.; American Med.*, July 4, 1903).

FEET, PAINFUL AFFECTIONS OF THE.

It has not been possible to tell, with any certainty, by examination, whether or not the feet of an individual are likely to give trouble. The only reliable information obtained in these cases was given by the imprints seen through glass. A foot with a well-distributed pressure area seemed rather less likely to give trouble than one resting on two islands; the degree of pronation, the condition of the circulation, the relative weight of the nurse, and the dorsal flexibility of the foot all proving of little or no value as elements in prognosis. A flat foot may be perfectly serviceable, as may also a severely pronated one, while an apparently well-balanced foot may become painful. The factors in causing the trouble among the nurses were to be sought rather in the general conditions than in any special conformation of the foot. It followed, in many cases, illness and other conditions causing muscular debility. It occurred in most cases from two to three months after entrance, and it began most often in the early spring, when the nurses had been indoors all winter, and least often in the fall. The trouble was caused by a rolling in of the foot and a shifting inward of its weight-bearing areas, and not in any case ob-

served by a breaking down or even lowering of the arch. Although proof by figures is lacking, it is probable that the amount of trouble has been decidedly less than it would have been without the use of a proper boot. R. W. Lovett (*American Medicine*, July 4, 1903).

GALL-BLADDER, INDICATIONS FOR EXTIRPATION OF THE.

Certain lesions of the gall-bladder, such as new growths and gangrenes, demand its removal. Other lesions, such as contracted and inflamed gall-bladders that have thickened walls, are best treated by cholecystectomy. In general, all gall-bladders that do not permit of easy and efficient drainage should be extirpated. Drainage is to be preferred in the dilated and infected gall-bladder, provided it is neither gangrenous nor materially changed. It is also to be preferred, as a rule, in cases of acute cholecystitis with severe constitutional symptoms, provided there is neither gangrene nor contraction. Extirpation is to be preferred in chronic cholecystitis, with dilatation and thickening of the gall-bladder, and especially so if there is a stone impacted in the cystic duct. If the stone can be dislodged back into the gall-bladder, then drainage will give at least as good results. In the case of simple gall-stones, where complete restoration of the function of the gall-bladder seems probable, drainage is indicated. Chronic pancreatitis, whether associated with gall-stones or not, requires drainage through the gall-bladder. Cholecystectomy is, in this condition, unjustifiable. M. H. Richardson (*Medical News*, May 2, 1903).

GONORRHOEA, PROPHYLAXIS OF.

The laity needs an entire reconstruction of the traditional view that gonor-

rhœa is a trivial disease, easily cured and entailing no serious after-consequences. A knowledge of the fact that apparent cures are most often deceptive, that the chief danger of the disease is its potentiality for mischief after apparent cure. That the gonococci are endowed with remarkable longevity; that they may persist in a latent state, susceptible of being awakened into activity and virulence, months or years after active symptoms have ceased. That the necessary and indispensable condition of the admissibility to marriage of the gonorrhœic is a clean bill of health, the absence of gonococci from the urethral secretions, demonstrated by the most exacting bacteriological tests.

The result of the false impression instilled into the minds of young men—that sexual indulgence is essential to health—should be corrected. It is through the medical profession that this saving and salutary influence of enlightenment must come. The family physician is peculiarly adapted—by his intimate relation with his patients, the freedom which his vocation allows him to talk on topics ordinarily forbidden, and his relation as friend as well as professional adviser—to impart this information and explain matters relating to sexual hygiene in a manner always decent, but sufficiently plain. Prince A. Morrow (*New York Medical Journal and Philadelphia Medical Journal*, Consolidated, July 4, 1903).

GUNSHOT WOUNDS, COMPLICATIONS AFTER.

The lesions that augment the development of tetanus and other infections in gunshot wounds appear to depend upon the sectional area of the bullet, its velocity, and the resistance encountered on its impact. The greater the sectional

area or velocity of the bullet, the greater will be the lesion. Hematomas especially predispose to infection and increase the danger from tetanus, as is also the case when the wound is burned by powder, etc. Muller and Koller tried various methods of treatment of the channel track in gunshot wounds caused by projectiles that were primarily infected, namely: (1) controls, for which nothing was done; (2) those treated with a glass drain; (3) those treated with iodoform gauze drain; (4) those irrigated with 5-per-cent. solution of carbolic acid; (5) those treated by rubbing with a cotton mop soaked in tincture of iodine; (6) those treated by cauterizing the wound. All the wounds were dressed with a clean sterile dressing, and the results showed that the animals treated by simple dressing did best of all, and that those treated by radical measures, such as swabbing with iodine and the application of the thermocautery, gave evidence of supuration in every instance. L. A. la Garde (*Trans. Amer. Surg. Assoc.; American Med.*, July 4, 1903).

HYPOTHERMOCLYSIS IN GENERAL SURGICAL INFECTIONS.

The beneficent effect of hypothermoclysis in general infection is emphasized by the writer in his description of a case of acute osteomyelitis which had its origin in a severe traumatism and which became the focus from which a general infection spread. The condition of the patient gave little hope after local intervention; profound depression, hyperthermia, small frequent pulse, profuse diarrhœa, erythematous and hemorrhagic eruptions upon the skin, grave changes in the blood and numerous bacteria in that fluid, all pointed to a fatal issue. Incision and drainage of the medullary cavity brought about no im-

provement in the clinical symptoms; and, hyperthermia persisting, recourse was had to abundant injections of artificial serum. Two hypodermic injections of 500 cubic centimeters each were given in one day and a third, of the same quantity, was administered the following day, after which there was slight remissions of temperature and a lessened depression was apparent. A fourth injection, upon the following day, was followed by marked improvement, and a gradual disappearance of the symptoms of general infection ensued. Cultures from the blood, taken ten days after the last infection, no longer showed development of bacterial colonies and the patient made a complete recovery, which, the author believes, is largely due to the favorable influence upon the general condition of hypodermoclysis. G. Tomasselli (*Medical News*, July 11, 1903; from *Gaz. Osped.*, May 31, 1903).

INSPIRATORY STRIDOR, CONGENITAL.

Deformity of the epiglottis, though not the cause of stridor, is always present. It is distinguished by its appearance at birth; the limitation of the sound to inspiration; the absence of continuous cyanosis; the constancy of the sound independent of the position of the child; the laryngoscopic appearance of the epiglottis and aryepiglottic fold. The treatment is purely symptomatic, tracheotomy or intubation being once in a while necessary. Green (*Boston Medical and Surgical Journal*, June 11, 1903).

KIDNEY, MOVABLE.

In neurasthenic cases nephropexy may do good. Vomiting and other gastric symptoms can certainly be cured, but, if dilatation of the stomach is present, a guarded prognosis must be given. One

must be most cautious in concluding that a movable kidney is the cause of obscure abdominal symptoms. Movable kidney occasionally causes symptoms which exactly simulate those due to gall-stones, but, seeing that the coincidence of movable kidney and gall-stones is not uncommon, it would be unwise merely to fix the kidney without a preliminary examination of the gall-bladder and ducts. While many cases of movable kidney cause no symptoms and require no operation, there remain many which do cause symptoms, and in a fair proportion of these an excellent result from nephropexy may confidently be expected. Gordon (*Lancet*, June 6, 1903).

LEUCOCYTE-COUNT IN INFLAMMATORY PROCESSES ORIGINATING IN THE CÆCUM AND APPENDIX.

Examination of 70 cases sustains the opinion of observers in regard to the value of the leucocyte-count in differentiating simple fibrinous exudate from abscess-formation. In the former there may be in the beginning a leucocytosis of 23,000, but it rapidly subsides. If the number of leucocytes remains continuously high or reaches or surpasses 25,000 later in the affection, an abscess may be assumed or retention of pus. In case of diffuse peritonitis the height of the figure is not so characteristic as its tendency to rise or fall. Stadler (*Mittheilungen a. d. Grenzgebieten der Med. u. Chir.*, vol. xi, No. 3, 1903).

LOCOMOTOR ATAXIA, ETIOLOGY OF.

Cases of tabes of traumatic origin have been described by many authors, but it is by no means generally accepted that these cases are really due to the trauma. Case of a 32-year-old-man, who had not had syphilis, but who developed tabes in connection with a fall on his head.

The clinical signs of the disease were typical. A 46-year-old railway employee had been injured on the left leg, fracturing the malleolus; later, he broke his left thigh, and after this he developed the signs of *tabes dorsalis*. The writer then proceeds in detailing some post-mortem appearances. A laborer was affected with a progressive paralysis, which had followed a fall; eight months later he died. Postmortem the spinal column was found to be uninjured; the whole gray matter of the cord showed small patches of softening, and there was descending degeneration of the pyramidal track and ascending degeneration of the posterior columns. The rest of the cord was unaltered. After referring to the work of Schmaus in connection with multiple sclerosis and syringomyelia and of Stadelmann, in connection with late apoplexy after trauma, the writer passes on to the consideration of Minor's experiments on so-called nervous-system concussion. These experiments go to show that the symptoms of concussion are, in reality, due to slight lesions of the blood- and lymph-vessels, and the author is prepared to believe that some forms of trauma can produce like lesions in the nerve-fibers themselves. He argues from these and other observations that *tabes* can be and actually is at times caused by the direct effects of trauma. Passing on to overexertion, he instances some cases of needle-women who worked for very long times at sewing machines, and without any other possible cause developed *tabes*. Another case coming under his notice was that of a man who had to overexert himself by writing a great deal at night-time. At first his symptoms were ascribed to scrivener's palsy, but in course of time they proved to be tabetic. There was no syphilis. Fuerstner's ex-

periments on dogs, who were made to turn their head for a number of times, go to prove that prolonged exertion may lead to degeneration of the lateral columns of the cord. According to Edinger, overstimulation of the nervous system produces damage in the ganglion-cells chiefly, and the author finds that, if one explains this in the light of the neuron theory that the molecular arrangements are disturbed, we find but little difficulty in appreciating how over-exertion can lead to such a disease as *tabes*. Edinger's experiments with rats working in the treadmill support this. In conclusion, he adds a very few words on the effect of cold as a possible etiological factor. E. von Leyden (*Brit. Med. Jour.*, June 27, 1903; from *Berliner klin. Wochen.*, May 18, 1903).

MACULA. OPHTHALMOSCOPIC EXAMINATION OF THE.

The corneal reflex can be so reduced as to allow the surgeon to see the pupil alongside of it, by making the sight-hole small—1.5 millimeters in diameter—and holding it so that one edge of it is in front of the center of the surgeon's pupil, or by using a half-mirror. The visible field can be enlarged by getting close to the patient's pupil and excluding all unnecessary light. The illumination of the retina can be rendered brilliant at a certain point, or diffused equally over the whole visible field, by adjusting the source of light at the proper distance from the mirror, and by placing the right lens in a trial-frame before the patient's eye. E. Jackson (*Ophthalmic Record*, June, 1903).

MALARIAL DISEASE.

In the Andamans penal settlement there were, during 1902, 14,000 cases of malaria and 57 deaths. Infection from

mosquitoes alone will not account for this large number of cases, most of them being probably relapses brought about by insufficient food and exposure to cold and damp. The effective means of diminishing malaria are four in number: (*a*) destruction of all *Anopheles* mosquitoes, (*b*) the prevention of the infection of and by *Anopheles* mosquitoes by means of nets or combustible pastilles, (*c*) the dosage of the whole population with quinine to an effective extent, and (*d*) the keeping of the population in such a good state of general health that relapses or recrudescences are unlikely. The writer states that only one variety of *Anopheles* is known in the Andamans—*Anopheles Rossii*. Many native children harbor malarial parasites without showing rise of temperature, but such children usually have enlarged spleens. As regards the diagnosis of malaria by differential blood-counts, the author's results do not agree with those of Rogers, in that the percentage of large uninuclears often fell below 15 per cent. E. E. Waters (Lancet, June 13, 1903).

MENSTRUATION, WEIGHT-WAVE OF.

During several days, especially the first, preceding the menstrual flow, there occurs a progressive increase in the weight of a healthy young woman, often comprising—especially in winter—from two and one-half to five pounds, which may be from 1 1/2 to 5 per cent. of her usual weight. The climax of this gain is immediately followed by the rapid loss of a large part, perhaps half, of this increase in weight (often within eight to sixteen hours), and then a more gradual loss of the remainder, extending over several days. The menstrual flow begins during the rapid loss of weight mentioned, the appearance of the blood often, though not always, following im-

mediately on the crest of the wave. The flow continues with the less rapid loss of weight during the next few days, terminating about when the woman's weight regains its premenstrual level. The premenstrual gain in weight is due, not to increased ingestion of food, but to diminished excretion, especially of water. The rapid loss of weight following the crest of the wave is due, not to abstinence from food or loss of menstrual blood, but to rapid excretion of CO₂ and H₂O. The appearance of the menstrual blood does not always coincide with the beginning of loss in weight; the flow may begin before or, more often, after the loss of weight becomes distinct. After the weight has sunk to its premenstrual level, there may occur another crescendo and diminuendo movement, lasting several days, but less pronounced and typical than the menstrual wave. Hereafter the weight shows no constant variation until there occurs a sudden transient loss, which is the frequent forerunner of the next menstrual wave.

A girl of 14 and a woman of 23, both of irregular menstrual habit, exhibited the menstrual weight-wave on several occasions when the flow was nearly or quite lacking. A woman of 59, who had not menstruated for twelve years, showed no weight-wave characteristic of the menstrual period in young women. For two days preceding the climax in weight there is often marked torpidity of the bowels and scantiness of urine, while, with the decline in weight, excretion by bowels and kidneys, as well as by skin and lungs, is notably increased. The temperature-curve is not constant; there is usually a rise of about 1° F. during the increase in weight and a sudden fall after the crest of the weight-wave is passed. W. T. Belfield (Journal of

the American Medical Association, June 13, 1903).

NASAL POLYPI.

The question of a previous injury to the nose is to be considered in the etiology of polypi. Probably only a small proportion of cases are caused by sinus disease (usually ethmoiditis). A local vasomotor disturbance, which may be of constitutional origin, stands in a causative relation to polypi in a certain proportion of cases. The removal of the whole middle turbinate will be found necessary in many cases where the growths are diffuse. Many cases of nasal polypi can be cured if patients will return for treatment as instructed. J. Payson Clark (Boston Medical and Surgical Journal, July 2, 1903).

NERVOUS DISEASES, PROGNOSIS IN.

While this is better than is generally supposed, and the number of recoveries is as great as in any other disease, certain forms are hopeless, notably general paresis. Landry's palsy, and multiple sclerosis, even the most discouraging cases of myelitis, especially if traumatic, may turn out well, and many hemiplegias, especially when syphilitic, recover. A syphilitic etiology favorably modifies the prognosis, save in tabes, general paresis, and epilepsy; and even in these decided benefits may be secured. The recoveries in meningitis, excluding the tuberculous variety, reach fully 50 per cent. Among the insanities all the non-organic types are recoverable, and the majority yield excellent and prompt results. A vicious heredity always constitutes an adverse factor. In epilepsy, chorea, and the neuroses generally, the more anomalous the type, the more favorable the prognosis, is the rule. Eti-

ology is relatively unimportant in its bearing upon the prognosis in many of the neuroses. Removal of the cause, to be effective in promoting relief and convalescence, must be prompt—so prompt, indeed, as almost to precede diagnosis. William B. Pritchard (Medical Record, June 13, 1903).

NEUROFIBROMATOSIS.

The writers emphasize the following features: 1. The possible diagnostic aid to be derived from the presence of skin fibromata or naevi in obscure lesions of the nervous system. 2. The choreiform muscular twitchings observed in his first case. A similar condition was noted by Virchow, and in a case recently reported by Dr. Thomas to the Johns Hopkins Medical Society (Medical News, January 24, 1903, p. 183). 3. The absence of characteristic root-pain in a case of extramedullary compression of the cord. 4. The fact that neurofibromatosis is occasionally the cause of increased intravertebral or intracranial pressure. 5. The presence of neurofibromata without giving rise to neural symptoms. 6. The indications for surgical intervention are given not only by direct neural symptoms, but by the consideration of the fact that sometimes, although rarely, neurofibroma may assume a malignant character and undergo sarcomatous transformation. 7. That the absence of neural symptoms may be explained partly by the presence of an interfibrillary oedema and succulent myxomatous tissue within the hyperplastic fibrous tissue, thus diminishing and distributing the pressure, and partly by the absence of a tendency for this fibromatous tissue to contract, in contradistinction to inflammatory hyperplasia. Fraenkel and Ramsay Hunt (Medical Record, June 13, 1903).

NEW GROWTHS, ETIOLOGY OF.

Cell-activity and cell-type must always be the resultant of biochemical reaction of the principles of which the researches of Ehrlich and others have enabled us to obtain some information. Cell-proliferation as a form of cellular activity is always the resultant of such reaction. When it takes place as the result of increased availability of normal food-material, the new cells produced conform to the type of the parent-cells. When it follows the action of assimilable materials of abnormal constitution new cell-types are evoked, variants on the type of the parent-cells. Cell-proliferation of the latter type takes place in certain microparasitic infections. The new cell-types thus evoked exhibit various degrees of instability. In the granulomata (*infektionsgeschwülste*) their stability is considerable; in certain growths which result from infective agents (for example, condylomata) the equilibrium of the new type appears to be stable. In the so-called true tumors cell-types arise as variants on the normal cells of the organ or tissue of origin. The ways in which such cell-variants may be evoked is not discussed, but that they may result in some cases from the action of microparasites is a reasonable view. These cell-types are stable; their stability is due to the capacity of the particular variant to attach to itself and assimilate material in conformity with its type. In the simple tumors they are only locally stable, and are not immune to reactionary influences outside the tissue of origin and the normal relationships of parenchyma and connective tissue. In the malignant growths they possess a wide range of stability and immunity, and the degree of this is the measure of their capacity to form metastases, while local

infiltration, the other histological characteristic, is dependent on the principle of chemotaxis, the cells extending in those directions in which their variant and aberrant biochemical affinities enable them to annex material conformable to the building up of their characteristic type. K. W. Monsarrat (British Medical Journal, June 27, 1903).

PELVIC SUPPURATION IN THE FEMALE.

To prevent suppuration, examinations in patients suffering from any variety of pelvic inflammation should be made gently and infrequently. The use of sounds and cervical dilators, under ordinary circumstances, should be restricted to the operating-room, where the parts can be thoroughly prepared and the operator, nurse, and instruments thoroughly aseptized. After a gonorrhœal pus-tube has been removed the woman must be warned of the possibility of an invasion of the opposite side if she takes the chance of reinfection from the diseased male. Abscesses, irrespective of their origin, when "pointing" above or below, should be treated by simple incision and drainage. Sacculated abscesses presenting the characteristics of intraperitoneal tumors should be treated by laparotomy, without unnecessary delay. Abram Brothers (Medical News, June 6, 1903).

PUERPERAL INFECTION, TREATMENT OF.

The writer having met an unfortunate accident during the past winter, he has been prevented from pushing his investigation as far as he had hoped, particularly in the direction of securing control of cases treated only with saline infusion. However, he has observed the effects of the formalin treatment in fourteen cases of profound puerperal sepsis which had failed to yield to approved methods.

His own method consists in injecting into a superficial vein a solution of formalin in normal salt solution at a temperature of 100° F., employing the ordinary technique for saline infusion. In his own experience no injury has been done the blood from the use of this 1 to 5000 solution of formaldehyde, and convalescence has been exceedingly rapid and satisfactory. He thinks this rapid and marked improvement in the patients following close upon the use of the formalin injections, and the negative findings of microscopical examinations of the blood should at least set at rest the question of the possible harmfulness of this mode of treatment. (C. C. Barrows.)

In 1895, impressed with the futility of doing a radical operation in cases of puerperal infection, the writer tried curettage of the uterus, followed up by opening the *cul-de-sac* and packing with iodoform gauze. He had operated on 37 cases in this manner, only 1 failing to show the presence of streptococci in the uterus, and even in this case these organisms were found free in the pelvis. In all but 1 of the cases the streptococci had disappeared after the second dressing, so rapid had been the sterilization of the pelvis by the use of massive iodoform dressings. A sudden fall in the temperature and pulse uniformly followed this operation, and the constitutional effect of the iodine was demonstrated by the occurrence of a strong iodine reaction in the urine in five hours or less. Both the morbidity and the mortality have been decidedly less under this treatment than by any other. (W. R. Pryor.)

While most obstetricians have met cases of streptococcic infection that have suddenly and unexpectedly recovered without formalin injections or Dr.

Pryor's iodine treatment, the writer cannot but feel hopeful of good results in the future from the general line of investigation instituted by Dr. Barrows. (E. H. Grandin.)

The line of future investigation should be rather in the direction of searching for an antitoxic treatment. To offset the cases reported by Dr. Barrows, the writer had a series of six cases of severe puerperal infection successfully treated by the intravenous injection of normal salt solution. (Henry C. Coe.) (Proc. New York Acad. Med., May 21, 1903; Jour. Amer. Med. Assoc., June 20, 1903.)

RADIUM RAYS, THE PHYSIOLOGICO-PATHOLOGICAL IMPORTANCE OF.

If a piece of sealing wax is actively rubbed with flannel, it will, as is well known, attract to itself from a short distance small pieces of paper. If, now, after the sealing wax has been rubbed with the flannel, it is passed over the box containing the radium, its power to attract the pieces of paper is lost. Mammals are killed by exposing them to the radium from a distance. Mice were used, and were placed in glasses which were covered with a gauze sheet of zinc. The radium inclosed in a box made of gutta percha and metal was placed upon the cover. Such animals died within four or five days, under symptoms of paralysis of the nerve-centers, while mice similarly confined, but not exposed to the radium, lived and were in healthy condition. Upon the human skin radium thus used exerts an irritating influence and produces a dermatitis. Arterial blood is darkened in color under the influence of the radium rays. The blind who are slightly susceptible to light have this susceptibility much increased when radium is brought near to the eyes. The blind who have no

susceptibility to light do not react to the action of radium. The blind who can detect indistinct shadows of objects upon a light background under the action of the radium are enabled much more sharply to outline the objects. Persons with sound eyes, if the same are closed and tightly bandaged, perceive the light when radium is brought within ten to fifteen centimeters of their foreheads. Microscopical examinations may be made in a dark room by means of the radium rays. E. S. London (Berliner klin. Wochen., June 8, 1903).

RELAPSING FEVER, NEW TREATMENT OF.

The treatment of relapsing fever has always been unsatisfactory. It has never been possible to cultivate the spirillum outside the body. In the blood drawn off just after an attack the spirilla remain actively mobile for from two to four days, at a temperature of 10° to 15° C. If serum alone be used, the activity persists much longer—up to a hundred days—if the preparation be kept in capillary tubes. Experimentally, it has been shown that the spirilla in fresh blood show different resisting power to the action of salts, alkaloids, acids, and alkalies. In no known case is it possible to introduce sufficient of the drug into the body to kill the spirillum without endangering the life of the patient. The author has discovered that the addition of saline solution considerably increased the agglutinating power of the serum of apyretic patients: *e.g.*, in 1 case the spirilla retained their mobility in a hanging-drop preparation of the serum for five days. The addition of an equal quantity of saline solution caused cessation of movement in ten hours. In other cases similar results were obtained. In 4 cases 1000 to 1250 cubic centi-

meters of normal saline solution was injected two or three days after the temperature had reached normal, and in none of these cases was there a subsequent relapse, which, according to the author's experience with 890 cases, was unusual, as in only 160 cases was the disease confined to a single attack, and these cases were principally among children and young healthy adults. Karlinksi (Edinburgh Med. Jour., July, 1903; from Wiener klin. Wochen., No. 15, 1903).

RETROVERSION OF THE UTERUS, POSTERIOR CERVICO-VAGINAL FIXATION FOR UNCOMPLICATED.

Many operations done for the correction of this form of displacement (retroversion) fail because they do not restore the lost support of the utero-sacral ligaments and do not supply a substitute. The retroversion pessary, if properly adjusted, corrects the displacement because it holds the cervix backward in the hollow of the sacrum, thus causing the fundus to be thrown forward. But if the retractile power of the utero-sacral ligaments is completely lost it does not effect a cure, but must be worn constantly as an artificial support.

The operation described by the writer aims at overcoming the displacement by holding the cervix permanently backward in the hollow of the sacrum and doing away with the necessity for a pessary, making use of the posterior vaginal wall for the attachment of the cervix, which under normal conditions is rather firmly connected with the anterior wall of the rectum. The success of the operation depends upon the close attachment of the vagina to the rectum at its upper portion in particular. Hence it has a limited field, because in some cases there is a very loose connection between

the vagina and rectum, or sometimes the rectum is permanently dilated, and the vagina cannot be utilized for securing a fixed point for the cervix. In those cases, however, where the above-named condition is normal the operation has thus far proved satisfactory.

Technique. — The operation may be done under general or local (cocaine) anæsthesia. The former is more satisfactory, because it affords perfect relaxation for manipulation not possible with the latter. The patient is placed on the back in the exaggerated lithotomy position.

The vagina and vulva are cleansed in the usual manner by scrubbing, then the surface of the vagina and cervix is dried and painted with tincture of iodine to stain it and render it aseptic, or a solution of methylene blue may be used for this purpose.

An area about a half-inch square upon the posterior surface of the cervix is denuded of its mucous membrane, and a similar surface upon the posterior vaginal wall well up in the sulcus behind the cervix is likewise denuded. These denuded surfaces are then approximated by deep sutures. These sutures are inserted from in front backward under the denuded area upon the cervix, and from behind forward under the denuded area upon the vaginal wall. Three to four of these sutures will usually suffice, and when they are tied the cervix is drawn backward and the fundus thrown forward.

The suture material used is silkworm-gut, which may be retained until firm union has been secured. To render it more conspicuous for convenience in removing the sutures the silkworm-gut is stained previously with methylene blue.

A tampon of gauze is placed against the cervix to take the strain off the su-

tures and to keep the surface of the vagina dry. This is removed on the second day, and may be renewed or not as the judgment of the surgeon may dictate.

The patient is put to bed for a week, but is encouraged to rest upon either side rather than upon the back while in bed, and when she gets up she is cautioned to exercise moderate care for two or three weeks to avoid exertion that would put strain upon the uterus. The sutures are not removed until the end of the second or third week, or not until it is certain that firm union has been secured. A. H. Goelet (*International Journal of Surgery*, July, 1903).

SCARLET FEVER, INFECTIVITY OF.

Desquamation is not a manifestation of scarlet fever alone, and, although more complete in this disease, yet the more moderate peeling of measles and röteln has not been considered as being of specially infective character. The similarity between scarlet fever and diphtheria seems to point to an infective organism for the former similar in character to that of the latter. In each disease the tonsils and soft palate are the parts usually affected first. The tonsillar and buccal mucus is the home of the diphtherial contagion, and it would seem probable that the same secretion is ordinarily the habitat of the scarlet-fever virus; fever hospitals which have taken to discharging patients before desquamation has ceased have not shown any increase in the "return" cases.

Since the bacteriology of scarlatina has not yet been settled, it is, of course, impossible to be positive about the most dangerous stages of the disease, and hence it would perhaps be unwise to relax any of the present rules in

regard to quarantine. In spite of the increasing numbers of carefully isolated cases each year there seems to be no appreciable difference in the prevalence of the disease, and, as the expense incurred by this long confinement is such an important item, the necessity of it may well be questioned. The mortality of the disease, however, is constantly decreasing, and is now only one-eighth what it was forty years ago. L. C. Parkes (Practitioner, April, 1903).

SEPTIC OPERATIONS, AFTERTREATMENT OF.

When a surgeon has been himself the subject of a septic operation he is better able to appreciate some of the details that add to the comfort of the patient. Among these is the use of drain tubes instead of gauze, as easier to change. If the temperature and pain do not increase, why not leave the dressings untouched for days? And if moist dressings are applied, why not apply fresh ones outside and leave the one in contact with the wound undisturbed? The practice of cauterizing wounds with pure carbolic acid is particularly useful, as it reduces the secretions in the wounds for days. A wet dressing soothes pain far better than a dry one. In replacing tampons in a crevice or narrow cavity much pain is avoided by having the lips of the wound gently pulled apart by retractors. The wound surface should be touched as little as possible, and, as soon as the acute inflammation is past, the salve dressings should be applied. If new incisions become necessary local anæsthesia should not be attempted, as it is liable to fail in the debility of extensive septic processes. Operation should take place during the "ether drunk"—that is, during the first few

whiffs of ether. H. Küttner (Jour. Amer. Med. Assoc., July 18, 1903; from *Beit. zur klin. Chir.*, vol. xxxv, No. 2, 1903).

SLEEPING SICKNESS, ETIOLOGY OF.

In 70 per cent. of cases of sleeping sickness the writer has found in the cerebrospinal fluid taken by lumbar puncture during life a trypanosome which may possibly represent a new species. This trypanosome may be found also in the blood of the patients. In both blood and cerebrospinal fluid special bodies were found which the writer is inclined to consider developmental stages of the trypanosome. At the postmortem examination of 8 per cent. of the cases he has cultivated from the blood of the heart and the liquid of the lateral ventricles a variety of streptococcus which frequently shows cultural characters different from the typical streptococcus pyogenes. The question arises: what part have the two organisms in the etiology of the disease? From the whole of his researches the author is inclined to think that sleeping sickness is due to the trypanosome described. At the same time, in the last stages there is frequently a concomitant streptococcic infection which must play a certain part in the course of the disease. Aldo Castellani (Medical Record, July 4, 1903; from the *Journal of Tropical Medicine*).

SMALL-POX IN THE UNITED STATES.

As showing the extremely mild type of variola now prevalent in the United States, the following tabular statement, condensed from the public-health report of the Marine-Hospital Service (this table covers the period of time between December 27, 1902, and June 12, 1903), is given:—

CASES OF SMALL-POX IN THE UNITED STATES
WITH MORTALITY FROM SAME CAUSE.

STATE.	CASES.	DEATHS.
Alabama	74	0
Alaska	1	0
California	335	3
Colorado	647	0
Connecticut	39	0
Delaware	1	0
District of Columbia	15	1
Florida	328	0
Georgia	130	9
Illinois	375	21
Indiana	3,530	138
Iowa	80	0
Kansas	16	1
Kentucky	631	8
Louisiana	93	3
Maine	316	1
Maryland	55	1
Massachusetts	210	29
Michigan	633	15
Minnesota	3,658	28
Mississippi	27	0
Missouri	275	5
Montana	17	0
Nebraska	91	0
New Hampshire	216	0
New Jersey	101	5
New York	98	12
North Carolina	2,565	23
North Dakota	48	0
Ohio	4,390	246
Oregon	373	2
Pennsylvania	3,125	207
Rhode Island	5	1
South Carolina	250	10
Tennessee	1,839	32
Texas	11	0
Utah	334	2
Virginia	9	2
Washington	273	7
Wisconsin	4	0
Wyoming	1	0
Total	25,220	812

This exhibit gives a diminution in the number of cases as compared with the same period during 1902 of over 10,000 cases (25,220 in 1903, to 36,373 cases in 1902). Ohio, Indiana, Pennsylvania, Tennessee, and North Carolina show a large increasing prevalence of the mal-

ady, Ohio in particular—an increase of 75 per cent. The very slight mortality is something that is most astonishing. At no time in the history of the United States has there been such an enormous demand for vaccine-points, and vaccine firms have been taxed to the limit of their outputs. Much of the virus on the market is far from being satisfactory, but an improvement is noticeable over last year. Editorial (Cincinnati Lancet-Clinic, June 27, 1903).

 SYPHILIS, HYPERTROPHY OF SPLEEN
EARLY SIGN OF HEREDITARY.

In 40 cases of chronically enlarged spleen in children syphilis was unmistakable in 31, or 77.5 per cent. Only 9 were free from the taint of hereditary syphilis. Of 4 with the syndrome of pseudoleukæmic anæmia, all were rachitic, and in 2 the rachitis was associated with syphilis. In the others without evident anæmia syphilis was marked in 19 and associated with rachitis in 10. In 4 there were signs of rachitis alone, in 1 the splenomegaly was due to tuberculosis, and in 2 to some other unknown cause. These figures suggest the possibility of the existence of a syphilitic rachitis. In any event, in presence of a case of rachitis without appreciable signs of syphilis, the possibility of the latter should be considered. Even in very severe cases of hereditary syphilis of this splenomegalic type the patient may recover under prompt mercurial treatment, though the stage of pseudoleukæmic anæmia may have been reached. The writer has examined 376 children under two years of age, and found, among those with spleen of normal size, that 59 had rachitis, no syphilis; 23 syphilis, no rachitis; and 8 rachitis plus syphilis, while there were 40 with splenomegaly included, as men-

tioned above; 12 with rachitis plus syphilis; 6 with rachitis, no signs of syphilis; and 19 with syphilis alone. The splenomegaly may be accompanied by a certain amount of enlargement of liver and glands. The coexistence of splenomegaly and rachitis does not, therefore, exclude syphilis, but rather renders it more probable, as in 66 per cent. syphilis was certain or probable. The same is true of splenic pseudoleukæmic anæmia for 50 per cent. A. B. Marfan (*Revue Mens. des Mal. de l'Enfance*, vol. xxi, No. 5; *Jour. Amer. Med. Assoc.*, June 20, 1903).

TONSILLOTOMY, HÆMORRHAGE FOLLOWING.

The writer reports the following case: "A. R., a boy of 7, a resident of New York City, was admitted to the hospital March 9, 1900, at 5 P.M. At 2 P.M. of the day previous this child had been operated upon for bilateral hypertrophied tonsils. According to the history given, no serious hæmorrhage occurred immediately after the operation. On the afternoon of the day of admission the child's condition became so alarming that he was hurriedly taken to the hospital by his mother. I saw the patient immediately after his arrival. At first no history of the operation was given, the mother being evidently in entire ignorance of the cause of the boy's symptoms. It was only after close questioning that the fact of the operation was elicited. Undoubtedly the hæmorrhage must have commenced during the morning hours to account for the following extreme symptoms. The child, who was of average stature, had some dyspnœa, so-called 'air-hunger'; consciousness was still present, but he was unable to articulate; no delirium; considerable vomiting of dark-colored blood, but no expect-

tation or bleeding from the mouth; epigastric pain on pressure due to the presence of blood in the stomach; the pulse was very rapid and feeble, at times scarcely perceptible. Upon looking into the mouth and depressing the tongue a parenchymatous spurting hæmorrhage was seen in the left tonsillar region, the blood being swallowed. The pillars were intact. On the right side no hæmorrhage was present. In view of the almost complete exsanguination I immediately decided to use the Paquelin cautery, prepared, however, to ligate the external carotid artery if necessary. A few whiffs of chloroform were given and the Paquelin, heated to a dull cherry-red color, was applied directly to the bleeding surface. The cessation of hæmorrhage was immediate. The patient's general condition being still very precarious, an infusion of normal salt solution was given. The quantity used was 700 cubic centimeters and was injected into the left median basilic vein. The infusion caused a distinct stimulation. No recurrence of hæmorrhage took place. Under sedatives, liquid diet, and tonics the child made an uneventful recovery and rapidly gained in weight, being discharged from the hospital on March 25, 1900. I might here add that the physician who performed the operation informed me later that six hours after the tonsillotomy no hæmorrhage or serious symptoms were present. Of the condition the next day he had not been informed until after the child had entered the hospital. He used the sharp Mathieu tonsillotome without any anæsthetic either local or general, and experienced no difficulty whatever. Absolute rest had been enjoined after the operation. The child had been in previous good health."

The main point of interest in this case

is that almost complete exsanguination resulted from tonsillar hæmorrhage following tonsillotomy. Subsequent examination excluded the nose, lungs, and stomach as possible concomitant factors in bringing about the condition. A. H. Urban (*American Medicine*, July 4, 1903).

TRANSMISSIBILITY OF DISEASE FROM ANIMALS TO MAN.

Certain diseases of animals are transmitted from species to species without diminution of virulence. Animal life being held cheap, the sources of infection in these cases are promptly extirpated and the sum-total of human deaths from them is not great. Other diseases of animals, such as vaccinia, are, when communicated to man, mild in character and protective in influence, as are certain diseases of man when communicated to animals. A number of diseases of animals are transmissible to animals of other species only with the utmost difficulty or not at all. The parasitic carriers of disease may be able to infect only that species of animals from which they received the infection. Species is a great, but little understood, factor in the distribution of disease. Heterolysis, rather than autolysis or isolysis, must be largely relied on in the science of immunization. G. T. McWhorter (*Mobile Medical and Surgical Journal*, May, 1903).

TROPICAL COUNTRIES, HYGIENE IN.

The writer formulates a plan of living for those obliged to reside in tropical countries, in order to avoid hepatic troubles generally, and chronic enlargement of this organ particularly. He advises moderate eating to avoid gastro-intestinal disorders and the avoidance of large quantities of easily putrescible

food, relying principally on fruits and vegetables. Gastro-intestinal disorders should be attended to at once, and constipation must be watched for. Alcoholic liquors should be taken not at all or very well diluted; their abuse leads to hepatic irritation and gastritis. Open-air exercise is recommended as an hepatic and respiratory stimulant. Profuse sweating should be avoided, by drinking only such quantity of fluids as are necessary for the organism. Idiopathic disease of the liver does not exist in tropical countries, and hepatic disorders can be avoided by attention to the regimen.

If the liver becomes enlarged, even though the patient feels well, he should take a long sojourn in a cooler climate, and adopt a suitable mode of life until the organ again reaches its normal size and performs its normal function. M. Tourtoulis (*Lyon Médical*, April 28 and May 3, 1903).

TUBERCULIN, CRITICAL STUDY OF.

Study based on an analysis of answers received to three hundred and twenty-five letters sent to leading clinicians.

The limitations of the remedy are carefully defined and should be studied by those using tuberculin.

The interest of the medical profession in tuberculin and allied products is increasing, and its attitude is gradually becoming less hostile. The attitude of the profession in Europe is more favorable than in this country. The greatest opposition comes from those who were unfortunate in their experience when tuberculin was first introduced, and those who, although they have had no experience, base their opinions upon their early trial, discrediting the work of recent writers upon the subject. Not one man who had given the latter reme-

dies an extensive trial, in suitable cases, failed to observe benefit from their use. The disproval and rejection of the remedies in most instances was based on faulty application and upon trials in unsuitable and far-advanced cases.

Those who have studied these remedies most carefully, and who have exercised greatest care and judgment in the selection of their cases, have, almost without exception, been convinced of their value; and they have been able to report enough cases to prove that these remedies will do that for which they are recommended. Basing an opinion on the results in 1200 first-stage cases, 611 of which were treated in sanatoria by the usual dietetic and hygienic methods and 589 by the same careful management plus tuberculin and allied products, we find that, of those treated in the latter manner, 20.2 per cent. more were cured than when the tuberculin preparations were omitted from treatment. In patients treated with tuberculin and allied products there is less tendency for the disease to spread to new tissue, and when an apparent cure is attained there is less danger of relapse. Tuberculin and allied products are fast becoming established as therapeutic measures in the treatment of tuberculosis, and are worthy of the earnest attention of the medical profession. F. N. Pottinger (*Therapeutic Gazette*, March, 1903).

TUBERCULOSIS, ACUTE, TRAUMATISM AS A DETERMINING FACTOR IN.

Two recently reported cases call attention to the part played by traumatism in determining the development of acute tuberculosis. In the *Berliner klinische Wochenschrift* for May 6th, Dr. R. Luecke reports the case of a boy who fell while skating, another boy stepping on his abdomen. The child gave evidence

of abdominal disease and died in two weeks. At autopsy diffuse tuberculous peritonitis, caseous degeneration of the mesenteric and mediastinal glands, and traces of a previous peritonitis were found. The other case was recorded in the *British Medical Journal* for May 23d. A man was struck at the base of the right lung with a heavy pair of tongs. "Cough did not appear for several months, when tubercle bacilli were also found." But immediately subsequent to the injury he complained of general weakness and there was found an area of consolidation at the right base in the axillary line. The author refers to the usual theory that, in the relation between pleurisy and phthisis, the pleurisy is due to an underlying tuberculosis, and holds that, on the contrary, it is just as likely that the pleurisy is the starting-point of the tuberculosis, as it was presumably in this case. The case first cited seems to bear out his view. Doubtless the tubercle bacilli must first be on hand before a tuberculosis can be set up; but, considering the universal distribution of that mischievous organism, some determining factors for its successful attack must be superadded, and it seems more than likely that traumatism of the large cavities, such as those sustained in the cases under consideration, are sufficiently effective. Editorial (*New York Medical Journal and Philadelphia Medical Journal, Consolidated*, July 4, 1903).

TUBERCULOSIS, ARREST OF, BY A SECONDARY INFECTION.

A contribution to the solution of the question concerning the possibility of the arrest of pulmonary tuberculosis by a secondary infection is made by the writer. Report of two cases of undoubted pulmonary tuberculosis — the

diagnosis having been confirmed by bacteriological examination of the sputum—in which a permanent cure followed what he believes to be a secondary streptococcal infection. This was marked by chills, high fever, headache, delirium, lumbar pains, epistaxis, nausea, hæmorrhagic macules upon the entire body, hæmoglobinuria, and blood-streaked fæces. These symptoms persisted about fifteen days in both cases; and, after their subsidence, a noticeable improvement was observed in the lungs, expectoration, cough, and general condition; and at the end of three and four months, respectively, a complete cure of the pulmonary lesion was seen in both cases, and the cure has been permanent. Examination of the blood was not made, but the author believes the secondary infection to be streptococcal; and bases this belief upon the findings of Haushalter and Etienne, which indicate that the hæmorrhagic manifestations in variola, scarlatina, and other exanthematous diseases are due to streptococcal infection. He attributes the healing of the pulmonary lesion to a modification of the soil by the secondary infection, which rendered the fertility and vitality of Koch's bacillus impossible. T. Silvestri (*Medical News*, July 11, 1903; from *Gaz. Osped.*, May 24, 1903).

TUBERCULOSIS, CHANNELS OF INFECTION IN.

The writer is engaged upon a research into the channels of infection in tuberculosis and the part played by the lymphatic glands in arresting, modifying, or disseminating infection, and in preventing recurrence of the disease.

The channels of infection in the human subject, which so far have been specially selected for research, are the ear, the mouth, and the upper respira-

tory passages. The reason for specially selecting these is twofold: in the first place, they lend themselves to direct ocular observation of the site of infection, and, secondly, to studying the development and progress of a tuberculous infection together with the behavior of the adjacent lymphatic glands toward infection. There is a further reason for selecting the ear. The research is to be conducted with reference to State medicine. Tuberculosis of the ear, whether regarded as a factor in the destruction of health and of childlife, or as a factor in the spread of infection to others, has not received the attention it deserves from a public-health standpoint. On these grounds statistics are being obtained of cases in which the scientific proof of the nature of the disease can be established, with a view of ascertaining (1) the frequency of disease, (2) the conditions under which it occurs, and (3) its prevention and treatment. The information so far obtained appears to justify the following conclusions: (1) that the ear is a site of primary infection and especially in children; (2) that the ear is far more frequently infected with tubercle than is commonly known; (3) that, unlike other forms of suppurative disease of the middle ear, usually its onset is unattended with pain, and on that account is overlooked and not treated; (4) that in the particular class referred to it is prone to lead to a disseminated tuberculosis and to a fatal termination by meningitis; (5) that there is a natural tendency for the disease to become localized and arrested in a manner which will be described when the part played by the lymphatic glands is discussed, which natural tendency can be assisted by treatment.

A question incidentally arising out of the above, but really forming a research

in itself, is whether the absence of pain in this and other forms of tuberculosis is to be attributed to bacteria and their products, apart from physical conditions. This matter has already been dealt with in a previous report, and is receiving further attention.

The results of an investigation into tuberculosis of the larynx will be tabulated and form a separate report. The part played by the lymphatic glands in tuberculosis is being studied with reference to three points: (1) the local effect upon the glands immediately adjacent to the site of infection, (2) the effect upon the lymphatic system generally, and (3) the personal factor in tuberculosis.

The following observations have been deduced from pathological changes met with in tuberculosis of the larynx and the ear. They are, perhaps, in this early stage of the research, to be regarded rather as hypotheses upon which to base further research than as conclusions definitely arrived at for general application. 1. That in tuberculosis the amount of glandular activity as evidenced by the increase in the size of the glands corresponding to the site of the infection is in direct proportion to the power and effort to resist a general infection, and is in inverse proportion to the susceptibility of the subject to tuberculosis other than the glandular form. 2. That when the same region becomes secondarily infected there is proportionately an absence of activity in the corresponding glands. 3. That the glandular condition is a criterion not only of the susceptibility of the subject, but also of the lesion being a primary or a secondary one. 4. That when tuberculosis has become generally quiescent or arrested, in the event of a recrudescence of the disease in an old focus the

active enlargement of the glands corresponding to the site of the recrudescence will occur, irrespective of the fact whether the site of recrudescence be the site of the primary or of a secondary infection from the original infection. Jobson Horne (*British Medical Journal*, July 4, 1903).

TUBERCULOSIS, CLIMATE IN THE TREATMENT OF.

Consumptives with a rapid breaking down of lung-tissue should avoid high altitudes. So also should those of neurotic temperaments.

Those with especially developed cardiac lesions, with a marked tendency to a disturbance of cardio-vascular balance, should avoid high altitudes.

Those completing the fifth decade, where the capacity of muscular exertion is considerably limited, should avoid high altitudes, although the writer has heard of many cases being taken to Colorado, recovering, and taking up their life there.

Laryngeal cases do better at the low altitudes. Russell Bellamy (*Medical News*, July 11, 1903).

TUBERCULOSIS, IMMUNIZATION AGAINST.

The writer confirms Behring's assertions in regard to the possibility of inducing passive immunization by means of the milk of immunized cows. He states that he has been experimenting in this line for five years, and has been able to isolate the protecting substance in the milk of the cows, although in small amounts, and has also established the fact that antitoxin taken into the digestive tract is absorbed and displays its protective action on animals and man as when injected. Passive immunization can thus be realized by injection or ingestion of antitoxin. The antitoxic sub-

stances are found not only in the milk and blood, but also in the meat of immunized animals. When a tuberculous focus anywhere on the body has completely healed, the individual is usually thereafter immune to tuberculosis. In families in which tuberculosis prevails, those members usually escape who have had a tuberculous joint or cutaneous affection or tuberculous focus elsewhere from which they have completely recovered. When an individual has completely recovered from a local tuberculous affection, as a rule, he is therefore immune. The writer denounces the injection of living bacilli, no matter how attenuated, as dangerous, and contends that Behring is wrong when he asserts that active immunization is not possible save with living cultures. He has succeeded in inducing active immunity by injection of the tuberculous toxin alone, and has effectually induced the production of antitoxin and agglutination by this means. As early as 1891 he claimed that the action of Koch's old tuberculin was probably due to the elaboration of protecting substances in the body which it induced, and all his experimental and clinical research since has only confirmed this view. He has tried the tuberculin test again and again on some of his patients whom he has cured of tuberculosis with serum from immunized animals, and the results have always shown that the cure was complete during seven years' experience. None of his patients have changed their environment; one is a physician who continues his practice, constantly exposed to new infection. The writer is now engaged in the attempt to produce a tuberculous focus which will confer active immunity after healing, without the use of living cultures. He has been eminently successful on animals and has repeatedly in-

duced an inflammatory tuberculous focus at the periphery with a material which he does not describe more fully. Applying the results to man, he has been able to induce the production of agglutination and pronounced leucocytosis, the same as observed in animals, although in the clinic the crucial test of inoculation with tuberculosis is out of the question. He makes the artificial focus on the arm and a small inflammatory lesion develops, with sterile pus and three days of fever, which then subsides and heals. E. Maragliano (*Jour. Amer. Med. Assoc.*, July 4, 1903; from *Klin.-Ther. Wochen.*, vol. x, Nos. 19-20).

TUBERCULOSIS, ZOMOTHERAPY IN.

Raw meat has no perceptible effect on the duration of experimental tuberculosis in dogs, if the bacilli are virulent and a sufficient number injected intravenously. In dogs it has no effect on the prolongation of the duration of experimental tuberculosis, even if the bacilli are attenuated, provided a reasonable quantity be injected intravenously. Under the same conditions dogs fed on a mixed diet with no raw meat may live a much longer time. As to the use of meat in pulmonary tuberculosis, it may be said: That meat is highly essential in the dietetic treatment. That much meat with a judicious admixture of carbohydrates, fats, etc., is essential to the treatment. That rare meat is better than meat well cooked. That meat-juice is of great value in superalimentation, as myosin albumin is easily digested by most patients—even the dyspeptic—and it affords a "maximum of nutrient for a minimum of effort." That meat-juice can be taken when patients can take no other form of meat. That the juice from raw meat seems slightly, if at all, more beneficial than the juice from

meat slightly browned. Lawrason Brown (American Journal of the Medical Sciences, June, 1903).

TYPHOID FEVER, THE BLOOD IN.

The blood in the typhoid fever of children differs from that of adult typhoid only in degree. The erythrocytes are reduced in number, especially during the first three weeks, after which they begin to increase rapidly, reaching normal in the fifth week. The hæmoglobin suffers more, proportionately, than the erythrocytes. The leucocytes are reduced throughout the first four weeks, the lowest average being reached during the second week, except in severe and tedious cases. The leucopenia is of diagnostic value, especially in children, in whom most febrile affections produce a leucocytosis. More data are needed to determine the priority of appearance of a "positive" serum-reaction or a leucopenia. The relative proportion of the different varieties of leucocytes varies at different periods of the disease, the greatest variations being found in the multinuclears and uninuclear elements; the former diminish and the latter increase as the disease advances. The increase in the mononuclears is chiefly in the lymphocytes. F. S. Churchill (Boston Medical and Surgical Journal, June 25, 1903).

TYPHOID FEVER, SPRING-WATER AND.

The firmly rooted popular belief in the superior excellence of ground-water, and especially of spring-water, is not difficult to understand. The usual clearness and brilliancy of such waters, together with their coolness, render them highly attractive to the eye and pleasing to the taste. In times of typhoid epidemics "pure spring-water" is a shibboleth of undoubted commercial value. A

TYPHOID FEVER, SPRING-WATER AND.

strong and wholly natural preference for ground-water as a source of town-supply has been evinced on many occasions. The citizens of Ithaca, after becoming fully aware of the origin of the late typhoid epidemic, could not express too deeply their abhorrence of surface-water. In France for many years *les eaux des sources* have held the highest position in the estimation of most municipal authorities, and in that country spring-waters have been widely accepted as the most desirable source of municipal supply.

The last decade, however, has seen a profound change in the position accorded by sanitarians to spring-waters. From many quarters evidence has accumulated that the delectable appearance of spring-water too often masks a treacherous nature. Gärtner ("Klinisches Jahrbuch," ix, 1902), in a recent monograph on this subject, has brought together a formidable array of outbreaks of typhoid fever attributed with greater or less certainty to spring-water. He clearly shows that in many instances the trusted spring-water is nothing but unfiltered surface-water of dubious antecedents. In chalk and limestone regions especially, where the existence of extensive subterranean channels and crevices renders it exceedingly difficult to determine the sources from which a spring is fed, the danger of surface contamination is ever present. The calamitous typhoid epidemic at Worthing, England, in 1893, will at once occur to the student of epidemiology as a case where the fissures in chalk were responsible for an unusually extensive outbreak of disease. In some regions small brooks or rivers which are known to receive sewage pollution may disappear wholly or in part in openings in their beds, only to emerge at a remote point as gushing and copious

"springs" which confiding inhabitants will make use of for drinking purposes with a calm assurance of safety which would indeed be ludicrous if it did not so often lead to appalling consequences. The changeable character of spring-water, both as regards turbidity and bacterial content; its dependence upon the amount of rainfall, upon the topography of the country and the underlying geological strata; and, above all, the often insuperable difficulty of learning the real origin of the water are not features that increase its desirability as a source of supply. Gärtner points out that geologists are largely responsible for the growth of the modern views regarding the uncertain character of spring-water, and quotes with unqualified approval a statement by the geologist, Heim, that he would drink the filtered water of Lake Zurich with a feeling of greater security than the water from the majority of springs with which he was acquainted. "Springs are changeable—to-day good, to-morrow, perhaps, unsafe."

If a widespread reaction has already set in against the indiscriminate use of ground-waters it is amply justified. There have been several noteworthy illustrations of the unsafe character of spring-water in the hygienic annals of recent years. The water-supply of Paris, which is perhaps the most extensive modern system of municipal spring-water supply, was for a time highly vaunted as an example of a naturally pure water, as compared with the "merely purified" water of Berlin and other European capitals. Pure spring-water was eloquently contrasted with filtered surface-water; innocence was said to be better than repentance. It was not long after its introduction, however, before the Paris supply fell under a cloud.

The epidemics of typhoid fever in 1894 and 1899, and the searching investigations to which they gave rise, have shown unmistakably that the spring-water from the region of the Vanne is not only not beyond suspicion, but that it is actually responsible for an excessive amount of typhoid fever in Paris. The facts brought to light by these and similar inquiries have caused a decided change in the opinion of French sanitarians regarding the character of spring-water, and recent utterances by Brouardel and others indicate that in France spring-water has had its day as the ideal for a supply.

In addition to the epidemiological evidence, recent bacteriological investigation has also cast doubt on the universally wholesome character of waters of this class. Horton (*Journal of Hygiene*, vol. iii, p. 155, 1903) has reported finding the colon bacillus in water from a number of springs and driven wells, and concludes, as the result of his investigations, that the fact that water is derived from a drilled well can in no wise be taken as a guarantee of its potability.

We can no longer hesitate to admit the fact that many spring- and ground-waters are nothing but insufficiently filtered surface-waters which may, indeed, have traversed long distances underground, but which have met in their course no layer of soil or sand of purifying power. To continue to place implicit trust in waters of this sort is to tempt further "accidents" of a kind with which medical literature already teems. Editorial (*Journal of the American Medical Association*, July 4, 1903).

URIC ACID, TRANSFORMATION OF.

The fact that watery extracts prepared from liver, kidney, muscle, blood, and spleen can all destroy uric acid to

varying degrees, and the fact that this power is largely destroyed by boiling makes it probable that these organs assume a similar function during life, and that this function is carried on by the aid of unorganized soluble "ferments" that the organs secrete.

One might object that these ferments are present in such minute quantities that they cannot be credited with such an important function; but this objection is invalid; the ferments are present in minimal quantities, because they are not intended to be present in large quantities in the organs at any time. When we prepare the extracts we destroy the cells and *force* the ferments into solution. In studying the action of such an extract, moreover, we see only a small portion of the power that would have been expended had the organs remained alive, had the cells remained intact. The writer illustrates his meaning by comparing the action of the ferment extracted from a kilo of yeast-cells and the action of a kilo of living yeast-cells. The ferment solution will develop less power by far than the living cells, as in the latter new ferment is continuously being formed; in other words, the action of the ferment accumulating during one hour is only a small portion of the hourly action of the cells. The ferment solutions made from human organs therefore contain only the *remnant of ferment that is not utilized during life*.

The proposition that uric acid is normally destroyed in the human organism may, therefore, be considered answered in the affirmative by these experiments and from analogy with certain animal experiments that have been described. Inadequacy of this function, other things being equal, may well be imagined to be a cause of uric acid accumulation in the blood and tissues, and,

secondarily of some of the most typical symptoms of goutiness.

Bulk for bulk, the human kidney destroys more uric acid than the liver, the liver more than the muscles, and the muscles more than the spleen and the blood. If one includes the relative bulk of these organs, as compared with the bulk of the whole body, in the calculation, it will be found that the muscles destroy most uric acid, next the kidneys, and then the liver, the spleen, and the blood.

The fact that the kidneys normally destroy uric acid teaches that great care should be exercised in drawing conclusions from the plus or minus of the urinary uric acid excretion; the urinary uric acid can no longer be considered an index of the circulating uric acid; it merely represents the algebraic sum of the circulating uric acid and the uric acid destroyed in the kidneys. There is, therefore, always more of circulating uric acid than is indicated by the urinary uric acid excretion.

As the majority of cases of goutiness begin with renal insufficiency ("latent" nephritis), and as nearly all advanced cases show typical kidney lesions (granular atrophy), the connection between perversions of the uric-acid-destroying powers of the kidneys as the primary event, and the subsequent development of uratic symptoms is apparent—the fact, moreover, that in lead poisoning granular nephritis precedes the development of gouty symptoms (Ebstein, Levison) lends support to this view. His experiments, therefore, favor the renal theory of gout.

Derangement of the liver-function has always been considered a prolific cause of the uratic diathesis, the common interpretation being that more uric acid than normal is formed. It seems more

probable that the derangement consists in an inability of the liver to destroy either the normal amount of circulating uric acid or the excess that is so frequently ingested (in the form of uric-acid-forming pabulum) by sufferers from gout.

The power of human muscles to destroy uric acid may explain, as Wiener suggests, why exercise often relieves uratic symptoms; the increased flow of blood-carrying uric acid through the muscles leads to greater uric-acid destruction, and must hence act beneficially.

The accelerating effect of salicylates and dilute alkalis on the power of one of the uric-acid-destroying bodies (the nucleo-proteid) to liberate oxygen aids in explaining the empirical fact that these remedies act beneficially in the uric acid diathesis.

The formation of oxalic acid from uric acid in the human kidney may explain the clinical fact that in gout oxaluria is not infrequent, and that occasionally the appearance of much oxalic acid in the urine is accompanied by a corresponding decrease in the uric acid of the urine.

The formation of urea from uric acid demonstrates that uric acid is not a terminal product, but an intermediary product between certain albumins (nucleins) and urea; the old view, slightly modified, is therefore rehabilitated. It is also clear that much that has been written on the so-called urea-uric-acid ratio is sheer nonsense.

There is much experimental evidence to show that the function of certain organs that destroy uric acid is also to destroy fats and sugars. Inadequacy of this triple function would lead to the accumulation of fat, sugar, or uric acid. These considerations point to a pathogenetic relationship between a trinity of

diseases that we already know to be clinically related, and that are all three characterized by the accumulation in the blood and tissues of certain bodies (fat, dextrose, uric acid) that should normally be destroyed, viz.: obesity, diabetes, and the uratic diathesis. A. C. Croftan (*Medical Record*, July 4, 1903).

VAGINAL CANCER, TREATMENT BY THE X-RAY.

Pennington, of Chicago, has devised a shield of metal which is clasped around the x-ray bulb; this shield has a cylindrical prolongation which can be used as a speculum or to which a speculum can be attached, and through which the rays are concentrated on growths in the rectum and vagina. The writer reports three cases of cancer of the vagina in which he has employed the x-ray treatment in all of which there has been some varying degree of success. He concludes, however, that at the present time, in certain cases of cancer of the cervix, nothing short of complete removal should be attempted. In the later stages of the same condition, where the vaginal vault is involved and also the body of the uterus, it is highly improbable that more than temporary relief can be given the patient by surgical means, and it would certainly seem that the x-ray treatment should be resorted to. Thomas P. Scully (*Annals of Gynecology and Paediatrics*, May, 1903).

WHOOPIING-COUGH, TRACTION OF THE JAW IN.

An experience with the Naegeli manoeuvre for overcoming whooping-cough shows that: Pulling the lower jaw downward and forward controls the paroxysms of whooping-cough in most instances, and most of the time. The method is usually more successful in older children

than in younger ones and infants. In cases without a whoop the expiratory spasm, with its asphyxia, is generally overcome, and in those with a whoop the latter is prevented. As a single therapeutic measure for the control of the paroxysms it deserves a place in the treatment of pertussis, and is as successful as any single drug, or even more so. Mothers, nurses, and other attendants should be instructed in its use in order that the oncoming attacks, especially at night, might be arrested. The manipulation is harmless, painless, and easy of application, without any of the ill effects of drugs; it offers a maximum good effect with a minimum derangement. The only contra-indication to its application is the presence of food in the mouth or œsophagus. Patients treated in this manner are less likely to suffer from complications and sequelæ than those treated only medicinally; they emerge from the disease in far better condition, less exhausted, and less emaciated because vomiting has been controlled. It is advisable to try the manœuvre in other spasmodic coughs and laryngeal spasms (laryngismus stridulus, pressure of enlarged cervical and bronchial glands, influenza, glottic spasm in catarrhal laryngitis), although the author's experience seems to show that it is far less efficacious in these conditions than in whooping-cough.

This method, being directed mainly to the control of the glottic spasm, does not preclude the advisability of supporting and sustaining the patient, guarding his gastro-intestinal tract, establishing equilibrium in the nerve-centers, and affording him every possible hygienic advantage. It is particularly indicated in instances complicated with diffuse bronchitis, broncho-pneumonia, convulsions, epistaxis, subconjunctival or

subcutaneous hæmorrhage, or sublingual ulceration, and in those children who by virtue of age, the presence of rachitis, scrofula, or general debility are predisposed to serious complications and sequelæ. J. Sobel (Archives of Pædiatrics, June, 1903).

YELLOW-FEVER GERM, PROBABLE NATURE AND LIFE-CYCLE OF.

Idle though it may seem to speculate about a germ which has never been seen, Carlos Finlay (Revista de Medicina Tropical, April, 1903) offers some very plausible theories concerning the nature of the yellow-fever germ. The fact that the germ requires two hosts for the completion of its life-cycle, one of them being the body of the nonimmune human being, and the other a particular species of mosquito, establishes an analogy with the mode of propagation of malaria, which, in the author's opinion, suggests that the germ of yellow fever, like that of malaria, must be a protozoön rather than a bacterium; and that the former goes through phases of development more or less similar to those of the malarial parasite. He believes that, while the human subject is rightly considered the permanent host of the malarial parasite, it is the *Stegomyia* mosquito which acts in that capacity for the yellow-fever parasite. He calls attention to the fact that malaria, untreated, is a chronic affection of long duration, while yellow fever is a very acute disease running its course, as a rule, in the space of a week. Though it is not known how long the young embryos of the malarial parasite may live within the body of the contaminated *Anopheles*, it seems evident to him that, cramped and crowded together in the tiny body of the insect, the embryos of malarial parasite would not be able to reach their full development for

want of space and such nourishment as would have been supplied by the human blood. On the other hand, he states that it is positively known that the germ of yellow fever continues to live within the body of the *Stegomyia* mosquito at least two months, and probably till the natural death of the mosquito host. A further point of contrast is seen in the fact that the *Anopheles* becomes infected by biting a person suffering from malaria at any time when the parasite, in the form of gametes or of resting bodies, happens to be present in the peripheral blood-circulation of that person—a condition which may last during several months, while the yellow-fever mosquito (*Stegomyia fasciata*) can only become infected if it chances to bite a yellow-fever patient within the first few days of his attack; and when convalescents just recovering from an attack of the disease are removed to another locality inhab-

ited by nonimmunes, though there may be an abundance of *Stegomyia* mosquitoes, the infection is not transmitted to their new abode. This contrast he deems, however, more apparent than real, if it is granted that the *Stegomyia* mosquito acts, for the yellow-fever germ, the same part that the human host does for the malarial parasite. Finlay believes that the yellow-fever germ, being a parasite of a very small insect in whose body it must go through all the phases of development and multiplication by schizogonia with only the very scant food-supply to be obtained from the tissues of its host, must of necessity by a much smaller protozoön than the malarial parasite. He deems it possible, however, that in the body of the contaminated *Stegomyia* some larger, resting form, analogous to the crescent of malaria, may some time be discovered. Editorial (New York Med. Jour., May 23, 1903).

Books and Monographs Received.

The editor begs to acknowledge, with thanks, the receipt of the following books and monographs:—

The Physiological Action of Adrenalin Chloride. By Isaac Ott and S. B. Harris, Philadelphia.—Iodothyryl and Glycosuria. By Isaac Ott and S. B. Harris, Philadelphia. 1903.—The Relation of Manual Therapy to the Vasomotor Mechanism. By John P. Arnold, Philadelphia. 1903.—Thoughts on the Treatment of Morphinism. By George E. Pettey, Memphis, Tenn. 1903.—Tuberculosis and the Sanatorium. By John Lowman, Cleveland, Ohio. 1903.—Notes from the Throat Department of the Pathological Laboratory of the Manhattan Eye and Ear Hospital. By Jonathan Wright, New York City. 1903.—Om Isehias. By F. Levison, Copenhagen, Denmark.—Beretning fra Dr. F. Levison's Klinik, Copenhagen, Denmark. 1902.—Die Polyarthritidis Villosa Infectiosa. Von F. Levison, Copenhagen. 1903.—An Experimental Investigation of Trypanosoma Lewisii. By Edward Francis, Public-Health and Marine-Hospital Service, Washington, D. C. 1903.—A Statistical Study of the Intestinal Parasites of 500 White Male Patients at the United States Government Hospital for the Insane. By Philip E. Garrison, Brayton H. Ransom, and Earle C. Stevenson.—A Parasitic Roundworm in American Mosquitoes. By Ch. Wardell Stiles.—The Type Species of the Cestode Genus. By Ch. Wardell Stiles. Public-Health and Marine-Hospital Service, Washington, D. C. 1903.—Report of Working Party No. 1, Yellow Fever Institute. A Study of the Etiology of Yellow Fever. By H. B. Parker, G. E. Beyer, O. L. Pothier. Public-Health and Marine-Hospital Service, Washington, D. C. 1903.—Squab-raising. By W. E. Rice, United States Department of Agriculture, Washington, D. C. 1903.—The Bitter Rot of Apples. By Hermann von Schrenck and Perley Spaulding. United States Department of Agriculture, Washington, D. C. 1903.

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"THE IODINE TREATMENT OF PUERPERAL SEPSIS" AND THE FEBRILE PROCESS.

In an article entitled "The Iodine Treatment of Puerperal Sepsis," W. R. Pryor, of New York, in the *New York Medical Journal and Philadelphia Medical Journal*, of August 22, 1903, writes as follows: "As a first and essential step in the selection of a rational method of treatment must be the recognition of the fact that, with rare exceptions, puerperal sepsis is a type of lymphangitis arising in the uterus,

which through the absorbents produces grave lesions in remote organs. The mortality which accompanies it is due, not to changes in the uterus or its adnexa, but to the propagation of septic germs at points remote from the pelvis, the general peritoneum, the lungs, the heart, and particularly the kidneys. . . .

"Were puerperal sepsis, like gonorrhœa, local in its activity, there could no longer be doubt regarding the proper line of procedure. But the local lesions are insignificant compared with those produced in remote organs. Yet the field of origin cannot be ignored, for, even though a remote complication, like pneumonia, be properly treated, the persistence of activity in the wound of entrance, the uterus, will allow the supervention of other lesions which may destroy or seriously damage the patient.

"We cannot, then, view and treat puerperal sepsis as a local affection only, nor can we ignore the local lesion while treating some one of the distant complications."

The writer then advocates a method of treatment calculated to secure the sterilization of the original wound and accomplish "the absorption by the *infected lymphatics* of a potent, yet harmless, antiseptic, at the same time accompanied by such treatment as would promote the eliminative functions."

Impressed with the futility of performing either a radical vaginal or abdominal operation in this condition, he began, in 1895, at the City Hospital of New York, to curette the infected uteri and to open broadly the posterior *cul-de-sac*, packing both with iodoform gauze, "under the mistaken idea," he states, that he should "drain away something." He was struck with the fact that in many, even the worse cases, there was "*nothing to drain away except serum, and yet the result of the treatment was perfect.*" He then began the examination of the uterine discharges and of the pelvic contents. "The bacteriological work was done in a few cases by Van Giesen and Visman, but chiefly by Jeffries," says the author. "There have been 37 cases operated upon. In 36 cases streptococci, generally mixed with other germs, have been found in the uterine cavity, while in all the cases streptococci have been found in the serum or lymph or free pus from the *cul-de-sac*. I know of no one else who has attempted a similar line of investigation. I consider most valuable the observation that in every case of puerperal streptococcic endometritis we find streptococci free in the pelvis, and that in over 97 per cent. of cases they are present in the uterine contents. It would seem that the presence of streptococci in the uterine or pelvic contents alone furnishes proof of streptococcic puerperal pelvic lymphangitis. And those who report cases as septic rarely take the trouble to prove them so by the sole positive test."

The local results of the treatment were then studied. In all cases but one not a single coccus of any kind was detected in the second dressing; they were also absent at the third dressing in the exception. By the application of massive iodoform dressings the writer had therefore "succeeded in sterilizing the pelvis, at least so far as cocci were concerned," and to the query, "what is the explanation of this?" he answers: "Iodoform, while maintaining its chemical entity as a teriodide of methenyl, has but feeble antiseptic properties. Placed in contact with an open wound in continuity of tissue, the serum tends to break up the iodoform into methenyl and *free iodine*, and then the chemical shows its power as a destroyer of cocci. But the disintegration is slow, particularly so if pus is present in large

quantities. Far different is it when the iodoform is brought into contact with a serous membrane. The iodoform at once gives up its iodine, partly in obedience to the influence of heat and partly to the chemical action of the blood-serum. Local iodism is within a short time produced, and it is this which sterilizes the pelvis."

Dr. Pryor then remarks: "But we have seen that the absorption of the streptococci and their toxins from the pelvis by means of the lymphatics produces in most cases destructive lesions in remote organs which are fatal in from 7 to 25 per cent. of the cases. What effect has the iodine in preventing these? It was hardly conceivable that the sudden drop in temperature and pulse which was uniformly seen to follow the operation in uncomplicated cases could be due to the mere creation of a raw surface in the uterus and to opening the posterior *cul-de-sac*, which, in most cases, evacuated serum only. I then began a series of investigations to determine this. The urine furnishes the strongest evidence of the rapid absorption of the iodine and of its general circulation. Taking the first fourteen cases as a basis, we found that a strong reaction of iodine was secured in an average of five hours. We found that in certain cases it appeared in two hours, and it is interesting to know that these were cases in which little lymph and no pus were present in the peritoneum, yet the symptoms of septicæmia were marked. In other words, there were grave constitutional symptoms and no apparent local lesions. The effect of iodine upon the blood will be published later.

"In all my operations either enterocolysis or intravenous infusion of normal saline solution has accompanied the operation for purposes of facilitating the elimination of iodine and toxins by the damaged kidneys. In all there have been 37 operations; 27 patients had not been previously operated on, and only 1 died; while 10 had been subjected to curetting before coming into my hands, and 3 died; thus confirming our belief in the *mischievousness of mere curetting in these cases.*"

Commentary.—In the February issue of this journal I commented upon Dr. Barrows's well-known case of acute septicæmia treated by intravenous infusion of formaldehyde, and emphasized my belief that it was not upon the germs and toxins in the blood that this agent acted, but upon the adrenal system. The bactericidal and antitoxic agents, in the light of this conception (based strictly upon recorded experimental evidence) are purely of physiological origin, and the remedy only acts as the exciting factor which awakens the protective functions to inordinate activity.

As I view the process, the remedy primarily stimulates the anterior pituitary body; this organ in turn, by impulses transmitted to the adrenals through the cervico-thoracic ganglia and the splanchnic nerve, causes these organs to pour into the inferior vena cava an increased proportion of their characteristic secretion. The latter, by at once becoming converted into an oxidizing body—*i.e.*, "adrenoxin," which the blood-serum carries to all parts of the organism—enhances the functional activity of all organs. Among these are (1) the pancreas and spleen, which jointly produce a trypsin as an internal secretion poured into the splenic vein, (2) the leucocytogenic structures, thus enhancing the elaboration of leucocytes, and (3) the vasomotor center (in the *posterior* pituitary body), thus causing general *vaso-*

constriction. The caliber of the great central vascular trunks being reduced, along with that of other arteries and veins, the blood is forced into the capillaries, particularly into those of the periphery. Capillaries do not take part in the general vasoconstriction, however, because they are not supplied with a muscular coat; indeed, they are *dilated* by the blood forced into them mainly by the contracted arteries and veins of the abdomen. The flush of fever is the outward evidence of this mechanical phenomenon.

The destruction of micro-organisms and their toxins is insured by an *adequate* febrile process, which, in turn, is the result of the interaction of three agents: (1) fibrinogen, a nucleo-proteid body rich in phosphorus secreted by neutrophile leucocytes; (2) the oxidizing body, or "adrenoxin"; and (3) the spleno-pancreatic secretion, or trypsin, referred to above, and which is active both in the blood and in the digestive areas of phagocytes. The *modus operandi* of the bactericidal and anti-toxic process—*ie.*, *fever*, which occurs mainly in the peripheral capillaries—is as follows: Bacteria and toxins are split into harmless products by trypsin, both in the phagocytic leucocytes and in the blood; but the activity of trypsin increases with rising temperature, as is well known; this rise is insured by the action of the *oxygen*-laden body adrenoxin, upon the *phosphorus*-laden fibrinogen. A high febrile process, therefore, is the expression, all else being equal, of a correspondingly great supply of trypsin, fibrinogen, and adrenoxin, and is due to proportionally active adrenals.

The adrenals are themselves, we have seen, functionally activated by the anterior pituitary body, the organ upon which all stimulating agents such as formaldehyde (up to a certain dose) react. But it is itself dependent for its physiological efficiency upon the thyroid gland, the internal secretion of which is also poured into the blood-stream. As is well known, iodine is the main active constituent of all thyroid extractives. Employed therapeutically, therefore, *iodine gives rise to all the manifestations of activity which other agents, among those capable of stimulating the adrenal center (the anterior pituitary body), procure; it does more than any other drug, however, in that it can thus raise the functional activity of the adrenals to a higher degree without overwhelming them; without, in other words, suddenly causing insufficiency of the adrenals or arresting their functions.*

In the light of the foregoing interpretation, the manner in which the "iodine treatment" brought about the results recorded by Dr. Pryor in puerperal sepsis becomes plain. I have repeatedly referred to the fact that certain toxins tend to induce adrenal insufficiency precisely as do certain drugs. In puerperal sepsis we have precisely such a toxin, and to introduce iodine in the organism is to powerfully stimulate the adrenals: *ie.*, to supply the blood with "Nature's own stimulant," and to reawaken the active febrile process to which the destruction of bacteria and their toxins is due.

But *is* the life-saving process reawakened by adrenal stimulants? A recent

paper of Dr. Barrows, which includes cases treated by other practitioners (*New York Medical Journal and Philadelphia Medical Journal*, July 4 and 11, 1903), furnishes evidence of this fact. Even though very high, the temperature in several cases in which formaldehyde infusions were used went still higher (in one from 104.4° F. to 107.6° F.) within a couple of hours, then steadily declined. It rose again in some, to once more be still further raised by the formaldehyde-saline solution (1 to 5000) for a short while, then steadily declined to normal. All the cases described by Dr. Barrows were saved; we have seen Dr. Pryor's mortality.

In the earlier portion of his paper the latter clinician says: "To our humiliation, it may be said, as many women to-day die of puerperal sepsis as before the exploitation and acceptance of Listerism." This will not continue if the labors of Dr. Barrows and Dr. Pryor are encouraged as they should be.

C. E. DE M. SAJOUS.

Cyclopædia of Current Literature.

ACHILLES JERK AND THE FRONT TAP, CONTRIBUTION TO THE STUDY OF.

The Achilles jerk is practically as constant in health as the knee-jerk. This reflex varies less in health than the knee-jerk in excursion and activity, and is the most easily elicited and uniform of all tendon-reflexes. It disappears, as a rule, early in tabes dorsalis, and its absence is as diagnostic of that disease as is loss of the knee-jerk. The writers have not seen a case far enough advanced to establish tabes with persistence of the Achilles jerk, except one case in which both the knee-jerk and the Achilles jerk were present on one side only. Bilateral preservation of the knee-jerk and loss of Achilles jerk were observed in two out of five cases of tabes. Enfeeblement of knee-jerk in health on one or both sides may be due to prior toxic influence, as diphtheria. This may also be true of the Achilles jerk, though in one case in which it could be demonstrated of the knee-jerk, the Achilles jerk was normal. Further observations on this point are desirable. The front tap is present

(generally on both sides) in about 40 per cent. of individuals in ordinary health; in some it is very active. It follows that its presence alone, even if active, does not establish disease nor indicate excessive irritability of the nervous system. In organic disease the front tap is generally increased with the other reflexes in hypertonic, and decreased (generally wanting) in hypotonic, states. In the so-called functional disorders, hysteria, neurasthenia, and unclassified psychoses the front tap was found present in 71 per cent. In epilepsy it was found present in 75 per cent. of cases. The test may therefore here prove of aid in combination with other findings, though its mere presence, or even activity, is not of positive diagnostic value; nor does its absence negative the existence of neuropathic conditions. Walton and Paul (*Journal of Nervous and Mental Disease*, June, 1903).

ADRENALIN IN CANCER.

By reason of the vasoconstriction which it effects, adrenalin is capable of

modifying the vascularization of cancerous tumors. In cancer of the rectum, painting twice daily with from 30 to 100 drops of a 1 in 1000 solution of adrenalin in a tablespoonful of water decreases the accompanying rectitis, may check the discharge, and brings about a temporary diminution in the size of the cancerous growth. External, ulcerated cancers become pale and decrease in volume, the hæmorrhage may be checked, and the progress of the affection is stayed for a time by the use of this remedy. Combined treatment with adrenalin, quinine, and beer-yeast is, in the author's opinion, distinctly serviceable in the prevention of recurrence after ablation of cancerous tumors.

Report now made of the case of a woman operated upon in 1901 for cancer of the uterus in whom, the operation being incomplete, a recurrence was expected. During 1901 and 1902 the patient was given quinine hydrochlorate. 0.25, in cachet before breakfast and dinner, for five days, and a teaspoonful of beer-yeast before meals the next five days, the two remedies being alternated thus for a month, at the end of which time treatment was suspended for five days and resumed in the same order. In 1902 adrenalin was added to the treatment, 5 to 10 drops of the 1 in 1000 solution being given on rising and retiring on the days in which the beer-yeast was given. At the present writing the patient continues to enjoy excellent health. In another case, operated upon three times for cancer of the breast, which recurred very shortly after each operation, this treatment was given, with the result that seven months have elapsed without a reappearance of the cancerous growth. C. Fiesinger (Medical News; from Journal des Praticiens, April 25, 1903).

ALCOHOL, ACTION OF.

The effect of alcohol on the circulation in the sick, and its effect on the power of man's blood to resist infection studied experimentally. Only the results of study of the first of these two problems are now reported. The following facts, regarding the action of alcohol, the author considers as already established by the investigations of many observers: (a) In health alcohol can replace the fats and carbohydrates. Whether it can replace the proteids is not yet settled. Alcohol is both a food and a poison. (b) In the stomach alcohol disturbs the digestive process to a greater or less degree. After absorption it exerts through the nervous system a temporary increase both in the secretion and in the motility of the stomach. On intestinal absorption, so far as known, alcohol exerts little or no influence. (c) In healthy people and in persons with cardiac and renal diseases alcohol has no considerable diuretic power. In healthy people it rather decreases than increases diaphoresis. (d) The labor of respiration is increased by alcohol, yet there is no increase in the amount of O absorbed nor in the quantity of CO₂ given off.

To the above facts regarding the action of alcohol he adds the following, determined by his experiments: 1. The action of alcohol upon the circulation is *nil*. Neither the maximum nor minimum blood-pressure showed any variation that could reasonably be attributed to the action of alcohol. 2. From the study of three hundred and nine patients suffering from a great variety of diseases it would seem that alcohol, in therapeutic diseases, has no effect on the temperature, pulse-rate, respiration-rate, appetite, delirium, and secretions. These observations should not, however, be interpreted as proving that alcohol is

useless or useful in disease. R. C. Cabot (Boston Medical and Surgical Journal, July 23, 1903).

ANAL HÆMORRHAGE, SIMPLE METHOD FOR THE CONTROL OF.

Anything that will stop bleeding is worth consideration. That a simple means may be described briefly is not to its demerit. Given a hæmorrhoid removed, the wound should be lightly cauterized and closed by the buttonhole stitch. The suture should be set with a long free end attached at the upper angle of the wound. Should there subsequently develop a hæmorrhage, the resident surgeon or trained nurse or whoever is in charge should draw the patient, in Sims's posture, to the bed's edge, take the suture (which is attached to the upper end of the wound) in the left hand and an opened hæmostat in the right; then, at the moment when the patient, in obedience to a command, strains as at defecation and the pelvic floor descends and anus everts, the attendant should draw taut the suture end and hold exposed and accessible to his forceps the entire length of the wound. No attempt should be made to individualize the bleeding points; the wound should be clamped throughout its length. T. C. Martin (New York Medical Journal and Philadelphia Medical Journal, August 22, 1903).

ANEURISM, GELATIN INJECTION IN.

Gelatin injections may, with proper precautions, be given subcutaneously with safety. They produce a marked and speedy decrease in all of the subjective and in some of the objective symptoms presented by internal aneurisms. This relief of symptoms is only explainable on the theory of a diminution in pressure effects from shrinkage

in size of the aneurismal sac. The diminution in size, accompanied with marked increase in resistancy of the tumor-wall, was capable of physical demonstration in three of the cases treated. The after-histories of the patients, so far as they could be obtained, afforded evidence that probably the beneficial results were permanent. G. Rankin (Lancet, July 11, 1903).

ANURIA, SURGICAL TREATMENT OF.

After reporting a successful operation for a case of obstructive anuria, the writer states that total suppression of urine occurs from mechanical obstruction of the ureter of the single functioning kidney of an individual, the other kidney either being congenitally absent or destroyed by previous disease; from mechanical obstruction of one ureter in an individual possessing two functioning kidneys, with increased intrarenal pressure on the obstructed side, which by reflex nerve-action prevents the unobstructed kidney from functioning—the so-called reflex anuria; or, possibly, after a nephrectomy, the involvement of the nerves in the pedicle may produce a reflex anuria; from trauma of both kidneys, which, for a time or until fatal issue is followed by complete cessation of function; also from trauma of a single kidney, which apparently by reflex action so affects the uninjured kidney that complete anuria results; from acute nephritis, as sometimes seen in scarlet fever and other forms of septicæmia; from destruction of practically all kidney-tissue as the result of such chronic lesions as tuberculosis, cystic degeneration, etc.; from certain poisons, as phosphorus, lead, turpentine, ether, chloroform, etc.; from the peculiar condition known as urethral fever, commonly the result of the passage of a catheter or

sound. In the polymorphous symptom-complex known as hysteria anuria may occur.

After classifying clinically the various causes under the three general headings of obstructive, reflex, or paralytic, and nonobstructive or nephritic, and discussing each in detail, the author states, in conclusion:—

The clinical importance of recognizing the three forms of anuria—obstructive, reflex, and nonobstructive—is to be emphasized. The imperative necessity of surgical interference in the obstructive and reflex forms and its possible value in the nonobstructive cases are to be recognized. That in the first two varieties, at least, a rapid nephrotomy on the side of pain, tenderness, and muscular rigidity is the operation of choice. If necessary, do not hesitate to make a double nephrotomy. That nitrous oxide anæsthesia is probably to be preferred. That time-consuming operations to relieve permanently the obstruction are to be postponed to a later period, after the patient has recovered from the anuria. Operate early, by the beginning of the third day. Bevan (*Annals of Surgery*, April, 1903).

APPENDICECTOMY, NEW INCISION FOR.

The writer suggests a modification of Gerster's incision by leaving the posterior sheath of the uterus uninjured. This is accomplished by an incision just over a line connecting the umbilicus with the middle of Poupart's ligament, from one to two centimeters internal to the external margin of the right rectus muscle. The cut must be as short as possible—from three to four centimeters in length. The anterior sheath of the rectus muscle is opened and the whole muscle is then easily pushed toward the median line, rendering the

semilunar line and the inferior epigastric artery visible. By making the peritoneal incision below the semilunar line and external to the epigastric artery, the iliac fossa is exposed to view sufficiently for the performance of the interval operation for appendicitis, for which the operation is most adapted. If it should prove that there is not sufficient room, the posterior sheath of the rectus can still be opened. Edwin Beer (*New York Medical Journal* and *Philadelphia Medical Journal*; from *Centralblatt für Chirurgie*, July 25, 1903).

ASCITES OF MALARIAL ORIGIN, SPLENECTOMY AND TALMA'S OPERATION IN.

Cases of excision of the spleen for various indications are becoming quite frequent, and Roeser in his last work on diseases of the spleen presents statistics of two hundred operations. Among the indications we find prolapse of the spleen, rupture, various traumata, wandering spleen, abscesses and various new formations, hæmorrhage, enlargement from malaria, splenic anæmia, and even leucocytosis and amyloid degeneration of the organ; finally splenectomy was recommended of late in Banti's disease. Last year Tausini hit upon the original idea of adding to a splenectomy Talma's operation, namely: remove the suspected focus of infection and create lateral paths for the disturbed abdominal circulation.

The author performed successfully a similarly combined operation for an enlarged spleen with considerable ascites of malarial origin. The patient was a native of a malarial district of Caucasus, with a history of malarial infection of twelve years' duration. For the last thirteen months she began to suffer from

a gradually increasing pain and swelling in the left subcostal region; to this were added considerable dyspnoea, frequent and severe vomiting, and complete anorexia. The largest circumference of the abdomen was one hundred and sixteen centimeters. Operation was performed three months after admission to the hospital (other measures of treatment having proved ineffective), and proved successful, as the pains disappeared, the abdominal circulation became equalized, and nutrition improved.

The author considers as the most important element of the success the performance of Talma's operation, whereby collateral circulation was established in the abdomen, and thus an end was put to the severe ascites. Postoperatively it is interesting to note that for the first ten days there was a rise of temperature in the form of a nonintermittent fever; later on this gave way to a series of typical malarial intermittent attacks, which finally yielded to internal administration of arsenic and to hypodermic injections of quinine. The author believes, together with Michayloosky and Jonnesco, that the extirpation of a "malarial" spleen does not always rid the patient of malaria, and the attacks of malaria are not less severe in patients without spleens than in those with healthy organs. The prognosis of the operation may generally be considered as favorable. Février found, out of 86 operated cases of extirpation of malarial nonwandering spleen, 17 fatal issues. Out of 16 cases, Michayloosky lost but 1, and that was due to an accident (pneumonia with pleurisy). On the other hand, cases of extirpated spleen for other indications run a more favorable course, as when the operation is performed for movable—namely, wandering (floating)—spleen or one that became enlarged

because of anaemia: in Banti's disease 13 cases of operation gave 3 deaths. It is the opinion of a great number of observers (and among them very many Russians) that the removal of the spleen is not attended by any marked or vital disturbances of nutrition or other functions of the organism. It is doubtless true that, with more positive and exact indications demanding this operation, a minimum of fatality will be reached. Finkelstein (*Medical News*; from Roussky Vrach, No. 22, 1903).

BREAST-MILK AND COWS' MILK.

Breast-milk and cows' milk are both acid. The litmus test for milk is unreliable, because of the variation in the quality of litmus-paper, and the litmus taking part in the reaction and not acting as an indicator. The effect of adding lime-water or bicarbonate of soda to feedings is to retard or inhibit the formation of curds by rennet. The teaching that lime-water, bicarbonate of sodium, or bicarbonate of potassium should be added to fresh milk or feedings simply because they are antacids is erroneous. The addition to milk or feedings of alkalis or salts that become alkaline in solution is an empirical method of aiding digestion by preventing the formation of dense curds that would slowly leave the stomach and be difficult of digestion in the intestine. C. G. Kerley, A. H. Gieschen, and George T. Myers (*Medical Record*, August 8, 1903).

CAISSON DISEASE.

The pathology, or, perhaps better, the physics, of caisson sickness has been practically settled by the experiments of Dr. Leonard J. Hill and Dr. J. J. MacCleod, which were published recently in the *London Hospital Gazette*. These experiments demonstrate that, when the

air in a closed chamber containing a human being is compressed, the pressure is equally transmitted to all the fluids of the body, and that the amount of nitrogen and oxygen dissolved in the blood increases according to Dalton's law of partial pressures. In an hour and a half the arterial blood becomes saturated. On sudden decompression, therefore, the liberated gas collects in the heart, froths, and stops the circulation. By slow compression, on the other hand, animals may recover after being exposed to the pressure of severe atmospheres. An important phase is that, as compressed air is a much better conductor of heat than air at the ordinary pressure, divers and caisson workers are exposed to cold in their work. *London Letter (New York Medical Journal and Philadelphia Medical Journal, August 8, 1903).*

CARCINOMA, RADIUM TREATMENT OF.

The writer exhibited from the late Professor Gussenbauer's clinic a case of carcinoma of the mouth and two of melanosarcomata at the meeting of the local medical society, June 26th. Each had been treated with the radium-rays, applying the radium in a capsule fastened to the spot with adhesive plaster. One melanosarcoma had been removed three years before, but numerous small metastases had been noticed for eight months, shimmering black through the skin. These nodules were treated once each with the radium for from five to twenty-five minutes. A dermatitis followed; the redness was first perceptible after from two to forty-eight hours. None of the nodules showed much change that had been treated for only fifteen minutes or less, but all the others grew perceptibly smaller, and some of them retrogressed completely. The

nodules disappeared before the superficial tissues exhibited the necrosis from the action of the rays. In one case an epithelioma at the corner of the mouth recurred after three operations three and six years apart. The outer surface formed a protruding ulcer about the size of a quarter, that could be palpated as a hard tumor the size of a hazelnut, not definitely circumscribed. A second tumor was also observed in the neck. The capsule containing the radium bromide was protected from moisture by a rubber cot, and the patient applied it himself to the lesion on the mouth for from fifteen to twenty minutes. The applications were made six times in less than a month. In seventeen days the tumor had perceptibly diminished in size and the ulcer began to heal over. No further visible reaction was observed at any time. The tumor rapidly subsided after this, and by the end of the month had apparently vanished. In the third case treated with the radium the same retrogression of the malignant tumor was realized. A. A. Exner (*Journal of the American Medical Association; from Wiener klinische Wochenschrift, vol. xvi, No. 27*).

CHANCROID BACILLUS.

This organism is present in the purulent secretions of the great majority of cases of chancroid, and occasionally also in the pus of buboes, and may be identified by its morphology and staining reaction, together with its ability to grow on ordinary culture-media. Characteristic growth of the organism in a pure state may be obtained in suitable media from genital chancroids direct and also from chancroidal buboes in some cases. Growth is most luxuriant in a medium of fresh blood and bouillon, but unmixed human blood is the best medium

for obtaining cultures from a source open to contamination. Inoculation of a pure culture of the bacillus or of chancroidal pus on the skin of a certain species of monkey reproduces the lesion, from which in turn the original organism may be recovered in culture. The cultivation of the same organism in a pure state from lesions on the hands, clinically resembling chancroid, in the absence of genital lesions, indicates that chancroid may be primary on an extragenital site. Bacteriological examination of all ulcers of this type is likely to establish in the future a greater prevalence of extragenital chancroid than has hitherto been reported. Lincoln Davis (*Journal of Medical Research*, June, 1903).

CHLOROMA.

Case in a girl, aged 13 years, who, when first seen, was markedly anæmic and complained of headache and pain in the neck. Later the anæmia became extreme; there was proptosis and a curious broadening of the face due to hard swellings in both temporal regions. Pains had increased and there was delirium at night, and also very obstinate constipation, which could not be relieved by drugs. There were nodular tumors in both breasts which showed blue through the skin. On the sternum and ribs were hard, irregular nodules which were tender. Glands of the neck and groin enlarged. Patient complained of inability to see light with left eye, and the ophthalmoscope showed hæmorrhagic patches in both eyes. The temperature ranged from 99° to 100° F., and the pulse, though rapid, was fairly full. Examination of the blood showed a large increase in white cells. At the autopsy multiple deposits of a bright-green material, of the consistency of firm lymph,

were found in various bones, lymphatic glands, kidneys, liver, brains, pancreas, thyroid, dura mater, and in the choroid plexus. Aside from these deposits the organs were fairly normal. Considerable masses were found beneath the temporal muscles and in the orbits, which caused the broadening of the face and the proptosis. Microscopically the deposits were made up of cells foreign to the parts. No explanation of the green color is given, nor does the author explain the cause of the disease, though he thinks possibly the obstinate constipation might account for it. Edgar Trevi-thick (*Lancet*, July 18, 1903).

CROUPOUS PNEUMONIA IN INFANCY.

Croupous pneumonia occurs in infants below the age of two years as frequently as, and probably more frequently than, in older children. In infants a diagnosis between croupous pneumonia and broncho-pneumonia with lobar consolidation is often impossible, many cases of broncho-pneumonia with lobar consolidation appearing in the postmortem room with a diagnosis of croupous pneumonia. On account of this difficulty statistics based on diagnosis alone are quite untrustworthy, but this error can largely be eliminated by studying autopsy cases. The mortality in croupous pneumonia is largest in the first years of life (25 per cent.), is considerable below the age of two years (15.4 per cent.), but for children above this age is comparatively small (2.3 per cent.). Clive Rivière (*Lancet*, July 18, 1903).

DECAPSULATION OF THE KIDNEY, RESULTS OF.

The writer, after an exhaustive series of experimentation on dogs, gives the following summary of findings:—

The capsule of the normal kidney con-

sists of two distinct layers, the outer being much thicker, while the inner is very thin—the direct continuation of the intertubular connective tissue. In the operation of decapsulation the outer layer only is removed, leaving the inner lacerated, but adherent to the kidney's surface. At first a thin exudate appears on the free surface of the kidney, which, with the remains of the inner layer, gradually becomes a fibrous investment, resembling macroscopically the normal capsule in that it strips readily, and with the passage of time it becomes more and more firm. Microscopical examination reveals the fact that it is in some cases thicker and in others thinner than the original, the former generally being true, and that in most instances it varies greatly in thickness in the same specimen. The structure, at least up to three and a half months, does not become differentiated into layers, but is one homogeneous mass of fibrous tissue. One case revealed the fact that it will form under adhesions, and is to be recognized as distinct from them both microscopically and macroscopically. There is sometimes an infiltration with round cells and a proliferation of the intertubular connective tissue of the cortex, without, however, affecting the glomeruli. The dogs in whom these changes were noted remained perfectly well as far as could be shown by their appetite, strength, and playfulness. Most important is the fact that in no case was there any considerable anastomosis between the renal and perirenal blood-channels. In one case, at the same time decapsulation of one kidney was performed, the renal artery of the other was ligated. This would, presumably, call for increased activity in the circulation of the decapsulated kidney. It was all, however, made up by the increased

size of the renal artery and vein, and not through a peripheral anastomosis.

The following are the conclusions reached: There are many difficulties in the way of drawing inferences as to the value of this measure as a curative or a palliative one in chronic glomerulonephritis. The chief one is that it has, up to the present time, been found impossible to give a dog an interstitial glomerulonephritis.

Edebohls draws these conclusions from his operations on patients suffering from chronic Bright's disease in which the method of decapsulation has been employed:—

1. That chronic Bright's disease can be cured by decapsulation of the kidneys in a large percentage of cases.

2. That the cause of the cure lies probably in the establishment of a collateral circulation between the blood-vessels in the adhesions and those of the kidney. Johnson (*Annals of Surgery*, April, 1903).

The following points in objection to Edebohls's first conclusion are raised:—

1. Included in Edebohls's cases are some operated upon for movable kidney in which chronic nephritis was diagnosed, and that, as a movable kidney by tension on the vessels may become congested, the presence of casts and other alterations of the urine found in chronic Bright's disease is not unusual.

2. That in most of the other cases a sufficient length of time had not elapsed to make the claim of the cure of the disease a justifiable one.

3. That in a large proportion of his cases Edebohls claims that one kidney alone was affected, whereas Kummel and Strauss have found that it is bilateral in every case of Bright's disease examined by them, basing their conclusions on ureteral catheterization.

4. That in Edebohls's case, and two reported by Ferguson, where a small portion of the cortex was removed for examination, the section of tissue taken was not sufficiently comprehensive to allow of a positive diagnosis.

Israel and Pousson believe that the benefits sometimes derived from this operation are due to relief of tension rather than to the establishment of a collateral circulation, as Edebohls has stated.

Pousson, from twenty-three cases of different surgeons, concludes that nephrotomy or nephrectomy may be indicated (*a*) in chronic nephritis complicated with hæmaturia; (*b*) with nephralgia; (*c*) in subacute infectious nephritis, under this head classifying the cases of Harrison; (*d*) in acute infectious nephritis. Miliary abscesses of a kidney and movable kidneys with pyelonephritis are included in this division. Pousson believes that there is a sympathetic relation between the kidneys as between the eyes, and that an operation upon one will frequently relieve the condition existing in the other. He used protracted drainage in all his cases.

Harrison employs renipuncture or division of the capsule, and gives the following indications for its use:—

1. Suppression of urine with alarming symptoms in scarlatinal nephritis.

2. Progressive signs of kidney degeneration, as shown by the persistence or increase of albumin.

3. Where a marked disturbance of the heart and circulatory apparatus arises in the course of inflammatory renal disorders.

The second conclusion of Edebohls—namely: that the improvement is due to the formation of new blood-vessels which anastomose with those of the kidney—has so far not been confirmed by evi-

dence from the autopsy table. Furthermore, it has been shown that added demands on the circulation of one kidney caused by the removal of the other, either with or without decapsulation of the first, does not in the dog produce an increased vascularity of the perirenal tissues. Schmitt (New York Medical Record, September 13, 1902).

ENCEPHALITIS.

The chief lesions in this disorder are summarized as follows: Cerebro-spinal meningitis, probably secondary to cerebritis and of the "cellular" type as described by Delafield and Prudden. General nonseptic cerebritis affecting all parts of the cerebrum, but most marked in the cortex and particularly so in that of the motor area. Degeneration of many of the ganglion-cells of the cortex. Degeneration of many of the fibers arising from the large pyramidal cells of the cortex, most marked in those derived from the motor areas. Diffuse degeneration of many of the fibers passing through both internal capsules. Inflammation of the tissues of the cerebellum, of much less marked degree than in the cerebrum, but apparently of the same character. Degeneration of many of the descending fibres of pons and medulla. Degeneration of the chief descending tracts of the spinal cord. Slight, probably secondary cytoplasmic degeneration of the ganglion-cells of the anterior horns of the spinal cord. Harlow Brooks (Medical News, August 8, 1903).

EPILEPSY, PATHOLOGY OF.

The frequency of nervous lesions in epileptics is difficult to establish. The ordinary examination is too open to oversights, and must be very systematic in order to justify the verdict of negative

findings. The great variation in the number of sclerosed cornu Ammonis, diffused gliosis, and small foci of softening quoted by various authors is certainly, to a great extent, an expression of variable attention—a picture of the psychology of investigators rather than of the distribution of facts.

Concerning the chemical investigations, the same psychological factor of personal interest is even more deleterious to a fair comprehension of the facts. The truism that observation of the rules of hygiene in every direction is a great factor in the management of epilepsy is decomposed into innumerable currents of interests. Nothing short of unprejudiced and complete series of investigation will help us here, and also a much greater conservatism with complicated methods, such as the tests of toxicity, the results of therapeutics, etc.

All these conditions are difficult to attain except in sufficiently equipped institutions, for which funds should be made available by the State and by scientific corporations, so that they may work free of the need of sensational results, create a sound basis in clinical work, and systematize the investigation according to methods which can be admitted as safe and fruitful.

To what extent this had best be carried is a question requiring much judgment. The one thing is certain,—and every move in this direction should receive credit and encouragement,—that institutions should be given a chance and should even be put under the obligation of doing justice to medical observation, of promoting the medical interests of its physicians, and of laying a good foundation of experience, such as the isolated practitioner can never get for himself. Under such circumstances more delicate investigations will find a

healthy soil. Adolf Meyer (Medical News, July 18, 1903).

EPITHELIOMA, THE CHANGES IN, UNDER THE X-RAY.

It is probable that, when epitheliomata react favorable to x-ray treatment, characteristic histological changes will be found. The important early changes are fatty degeneration and vascularization of the epithelial pearls. Leucocytic infiltration and various degeneration processes complete the destruction. Bodies indistinguishable from "Plimmer's bodies" multiply as epithelia degenerate. J. C. Stewart (Journal of the American Medical Association, July 18, 1903).

GASTRIC ULCER, ACTION OF BISMUTH IN.

Since the value of bismuth in the treatment of gastric ulcer is undisputed, it is a matter which has interested many investigators as to how it exerts its action. Some believe that it does good in mechanically protecting the ulcer, while others assign a specific action to it. The writer has studied the question, and found in his test-tube experiments that mixtures of bismutose in distilled water, when exposed to the light, changed in color to gray, and later to black. This reduction, he found, takes place in the stomach of dogs, and after a careful survey of his investigation he concluded that: 1. Calcium carbonate, magnesia usta, and like chemicals are not capable of being substituted for bismuth in the treatment of gastric ulcer. 2. The secretion of muens after the introduction of bismuth subnitrate is not due to the mechanical action of the crystals, but is due to a specific action of the salts of bismuth. 3. The curative action depends on the reduction of the bismuth salt, and the reduced oxydul penetrates

into the granulation tissue, and forms a protective to it. 4. Bismutose appears to be the most useful preparation of bismuth, on account of its easy reducibility. G. Fuchs (*British Medical Journal*; from *Deutsche medicinische Wochenschrift*, April 2, 1903).

GASTRO - INTESTINAL ATONY, SUPRARENAL EXTRACT IN.

The writer observed very favorable results from the use of Vassale's extract of the medullary substance of the suprarenal capsules in fourteen cases of atony of the stomach. Experimental and clinical tests demonstrated its marked influence on the motor function of the stomach, perceptible even from the outside. The effects in the clinic also suggested that the active principle secreted in the medullary substance of the suprarenal gland raises the tone of the cardiovascular apparatus and the metabolism in general. The benefits derived also suggest that certain cases of gastro-intestinal atony with general asthenia, headache, insomnia, etc., may be due to simple functional insufficiency of the suprarenal capsules, transient or relative. U. Baccarani and A. Plessi (*Journal of the American Medical Association*; from *Riforma Medica*, vol xix, No. 14).

GOUT, MEAT DIET AND ITS RELATION TO.

Pflüger showed in 1900 that an exclusive diet of horseflesh produced in dogs severe diarrhoea. He succeeded in isolating, to a certain extent, the constituent producing this deleterious effect; he found it present in the broth of the meat, could not precipitate it by means of alcohol, but could obtain an ethereal extract. At this time Kionka showed that he could produce a genuine arthritis urica in hens by an exclusive

diet of meat lasting for five months. Others before this had produced gout in birds in various ways: Ebstein, by the injection of chromic acid; von Kossa, by the administration of oxalic acid, phenol, etc. The microscopical changes in the organs of hens made gouty by methods such as those of Kionka, were studied by Bannes, with the following findings: Retention of urates in the liver, kidneys, spleen, and serous membranes; degenerative processes in the liver, kidneys, and spleen; necroses and cloudy swellings of the epithelia of the larger parenchymatous organs; and finally that there is microscopically a difference between gout induced by renal poisons, such as chromic acid, and that induced by an exclusive meat diet. The above results inspired the author to investigate the problem as to whether any pathological changes could be found in mammals after an exclusive diet on meat. The animals experimented on were dogs. Three of these animals after being fed for forty days on meat alone were killed by opening the carotids and immediately subjected to autopsy. They all showed fatty degeneration of the kidneys and liver, differing qualitatively in each case. The clinical history of these animals was as follows: As regards weight, all three presented marked changes, sometimes increasing, sometimes diminishing, but the end-weight being not very different from the initial weight. The general condition was always good. The urine sooner or later contained albumin. Although no casts were found, the state of the urine indicated a nephritis. The animals were markedly constipated. The autopsy revealed in all the cases an acute or a sub-acute nephritis, a cloudy swelling of the liver-parenchyma, and a pigment deposit in the spleen. The author maintains

that, although he was not able to produce gout in dogs, as Kionka had in hens, yet his results show some analogy to the clinical and pathological manifestations of human gout, and that he has proved a direct relationship between an absolute or almost absolute meat diet and the etiology of gout. He alludes, in this connection, to the frequency of gout among the beef-eating Englishmen, to the increased elimination of uric acid following a superabundant meat diet, and to the fact that only a part of the uric acid is eliminated through the kidneys. The greater part is destroyed, and, according to Wiener, in different animals is destroyed in different parts of the body. In the dog, and perhaps also in man, a part of the uric acid is broken up in the liver; in the cow, a portion is destroyed in the kidneys, and in all mammals the muscles take an important part in its destruction. Any degeneration, therefore, of the liver and kidneys would interfere with the destruction of uric acid. Moreover, lack of exercise would impair muscular activity in this direction. The diseased kidneys would at the same time be unable to do their share in the excretion of uric acid, with the result that this substance, accumulating in the body in certain localities, would give rise to the pathological and clinical picture of gout. A further support to this hypothesis is seen in the fact that the uric acid arthritis develops gradually, that degenerations of the liver and kidneys are found in many cases of gout, and that all those influences that would cause degeneration of the kidneys, liver, and muscles would favor the appearance of gout. Of these influences may be mentioned a meat diet, either exclusive or nearly so, chronic alcoholic poisoning, and chronic metal intoxication, particularly that of

lead. M. Kochmann (Medical News; from Pflüger's Archiv, vol xciv, Nos. 11 and 12).

HEART, BULLET HEALED IN THE.

After the first shock of the bullet wound directly in the sternum had subsided, the patient, a robust young man, was comparatively comfortable for three weeks, during which the bullet had probably been ensconced in the wall of the heart. At this date it penetrated into the heart, and the most violent arrhythmia followed for a time. Radioscopy showed the bullet in the heart, tossed about in the blood-stream. By the end of six months the bullet had become stationary, and there was scarcely a trace of arrhythmia. Experiments on dogs confirmed the assumption that the prognosis is not affected when the foreign body heals in the heart without trace of reaction. None of the dogs succumbed, although foreign bodies of various sizes had been introduced into the heart. O. Riethus (Deut. Zeit. f. Chir., vol. lxxvii, Esmarch Festschrift; Jour. Amer. Med. Assoc., June 20, 1903).

HEART DISEASE, RIGHT-SIDED DIA- PHRAGMATIC PLEURISY IN.

The writer draws attention to three cases of right-sided diaphragmatic pleurisy occurring as a sequel to pulmonary infarction in cases of valvular disease or arterial degeneration. Huchard first recognized this variety of pleural effusion. A typical case presents, during a passive congestion of the pulmonary bases, the onset of sudden and violent pain at one spot in the chest on the right side. On examination, the signs of a pulmonary infarction are complete: dullness, fine subcrepitant *râles*, and *souffle*. Later, the development of hæmoptoic crepitations confirm the diagnosis. The infarct

may (1) be absorbed; (2) give rise to an effusion of a sero-fibrinous, hæmorrhagic, or purulent nature. The fate of the infarct is determined (1) by its position under the pleura or in the lung-substance; (2) by the septicity or asepticity of the embolic area. The effusion (1) may occupy the general pleural cavity; (2) may become encysted and situated in the mediastinum; (3) may be limited by the base of the right lung above and the diaphragm below. The signs of this diaphragmatic effusion are latent; the pain and dyspnoea are referred to the infarction, and the impaired resonance is attributed to the basal congestion. Vocal vibrations and subcrepitant râles are felt and heard posteriorly. If a pleural effusion is suspected, an exploratory puncture in the lower intercostal spaces in the axillary line fails to withdraw any fluid. On the contrary, the liver appears enormous, the hepatic dullness extending almost from the clavicle downward into the abdomen. These signs were present in the author's case, which he diagnosed as a cardiopathic liver and which he treated with rest, milk, purgation, and cardiac tonics. The patient died suddenly, and at the necropsy one and one-half liters of fluid was found between the base of the right lung and the upper surface of the right half of the diaphragm. The liver proved, to his surprise, to be normal in size. He points out his triple error in diagnosis, prognosis, and treatment. This mistake enabled him to recognize his two later cases. A few days after a right pulmonary infarct, there supervened a considerable dullness in the axilla and in front, with absence of vocal vibrations and vesicular murmur, and the liver was depressed. An exploratory puncture in the fourth intercostal interspace in the mammary line withdrew sero-fibrinous

fluid. A puncture at the seat of election behind failed to reach the fluid on account of the thickness of the lung-tissue pressed against the posterior chest-wall. Only a very long needle would have succeeded.

The essential points of diagnosis insisted on by the author are these: dullness commencing on the right side in the axilla and in front, with rapid depression of the liver after clear indications of a pulmonary infarct. In cases of doubt he advises without hesitation an exploratory puncture in the center of the dullness. Phonendoscopy and radioscopy will render considerable help in this difficult problem. Apart from the infective nature of the pleural effusion, the prognosis is good if the case is recognized and dealt with at once. Treatment by thoracocentesis at the level of the exploratory puncture, and withdrawal up to 1200 grams of fluid, urged, to be repeated in a few days if the dyspnoea and signs of hepatic displacement are not relieved. The treatment of the particular form of heart disease should be carefully carried out at the same time in order to limit the formation of further infarctions. Louis Renon (*British Medical Journal*; from *Archives Générales de Médecine*, June 16, 1903).

HERNIA, RADICAL CURE OF, RESULTS OF OPERATIONS FOR.

Of 1003 cases under care, 647 were traced by the author and found well from one to eleven years after such surgical treatment; 705 were well from six months to eleven years, and 460 were well from two to eleven years. This list of 1003 operations shows 92 double herniæ, or 911 individual patients; 937 were cases of inguinal, and 66 cases of femoral, hernia. Of the 911 patients,

212 were females. In about 700 cases the patients were under the age of 20 years. Bassini's methods both for inguinal and femoral hernia were practiced in all these cases. These statistics confirm the opinion long held by the author that by far the greatest proportion of relapses occur within the first year after operation, and that most of them occur within the first six months. Patients who are quite well one year after the operation may therefore reasonably be expected to remain well, and after two years may be considered permanently cured. The author is a firm believer in the superiority of absorbable over nonabsorbable sutures in operations for the radical cure of hernia. The occasional occurrence of suppuration usually attributed to imperfectly sterilized sutures is chiefly due, it is held, to infection by the hands of the operator or his assistants. The proportion of instances of suppuration has been reduced from 4.2 to 1.25 per cent. since the author began to use rubber globes in performing his operations. In discussing the indications for operation the author holds that such treatment is seldom advisable, except in cases of strangulation in subjects under the age of 4 years. In many of these cases, probably two-thirds, the hernia can be cured by a truss. In all adult cases under the age of 50 years, unless there are strong contra-indications—such as (1) serious organic troubles of the heart, lungs, or kidneys; and (2) a very large, adherent, and irreducible hernia containing both intestine and omentum, especially in a stout individual—operation is advisable. Between the ages of 50 and 70 years operation is advised in healthy patients in cases in which the rupture is ineffectually retained by a truss. Coley (*Annals of Surgery*, June, 1903).

HERNIA, UMBILICAL, VERTICAL OVERLAPPING OPERATION FOR THE RADICAL CURE OF.

The results of operations for the radical cure of umbilical herniæ in adults have, heretofore, not been encouraging. These patients are usually obese, with attenuated abdominal muscles, and the thin, rigid character of the ring does not offer mechanical conditions advantageous to lasting union. To-day the expectation of cure approaches that of inguinal hernia by the following operation, which is easily and quickly performed. The steps are as follows:—

1. Transverse elliptical incisions are made surrounding the umbilicus and hernia; this is deepened to the base of the hernial protrusion.

2. The surfaces of the aponeurotic structures are carefully cleared two and one-half to three inches in all directions from the neck of the sac.

3. The fibrous and peritoneal coverings of the hernia are divided in a circular manner at the neck, exposing its contents. If intestinal viscera are present, the adhesions are separated and restitution made. The contained omentum is ligated and removed with the entire sac of the hernia and without tedious dissection of the adherent portion of omenta.

4. An incision is made through the aponeurotic and peritoneal structures of the ring extending one inch or less transversely to each side, and the peritoneum is separated from the under surface of the upper of the two flaps thus formed.

5. Beginning from two to two and one-half inches above the margin of the upper flap, three to four mattress sutures of silk or other permanent material are introduced, the loop firmly grasping the upper margin of the lower flap; suffi-

cient traction is made on these sutures to enable peritoneal approximation with running suture of catgut. The mattress sutures are then drawn into position, sliding the entire lower flap into the pocket previously formed between the aponeurosis and the peritoneum above.

6. The free margin of the upper flap is fixed by catgut sutures to the surface of the aponeurosis below, and the superficial incision closed in the usual manner. In the larger herniæ the incision through the fibrous coverings of the sac may be made somewhat above the base, thereby increasing the amount of tissue to be used in the overlapping process.

In very large protrusions in which part of the hernial contents is irreducible the patient should be kept in bed on a reduced diet and directed to manipulate the hernia, with the intention of replacing as much as possible. The irreducible portion must not be forced into the abdominal cavity after losing the "right of habitation." If of omentum only, it is readily disposed of by excision; if intestine, enough omentum previously contained in the peritoneal cavity should be removed to allow of reduction of the bowel without pressure. The patients should be kept in bed three to four weeks after operation and, after getting about, should not apply a truss, although most of these patients prefer to wear an abdominal supporter for a year. Piccoli (*Centralblatt für klinische Chirurgie*, January 13, 1900) reports a case successfully operated on in August, 1899, after the lateral plan, and refers to a case reported by Bonomo, operated on December 9, 1899, with a favorable result. J. A. Blake (*Medical Association of Greater New York*, January 14, 1901) reports several cases operated on by the lateral method during the year 1900, and refers to an article by Sapiejko

(*Revue de Chirurgie*, No. 2, 1900) in which a lateral operation is described.

The writer had described and operated by the lateral overlapping plan several years before the cases reported by these authors, and the lateral operation is a good operation, but it is not as good as the vertical method, in which the retaining structures are given a bearing point above the site of the umbilicus and intra-abdominal pressure thus acts to prevent separation instead of aiding it. W. J. Mayo (*Journal of the American Medical Association*, July 25, 1903).

HYPERIDROSIS, LOCAL.

When hyperidrosis is general, the cause—tuberculosis, arthritism, anæmia, fever—will, of course, be treated (*Journal des Praticiens*, June 27th). Agaricin, atropin, ergotin, sodium, tellurate are not of much use except in tuberculosis; they are contra-indicated in pyrexia. For hyperidrosis of the hands, feet, or axillæ, local baths with vinegar, an infusion of walnut-leaves and alum, $\frac{1}{4}$ -per-cent. solution of potassium permanganate, or a mixture of a tablespoonful of commercial formol in a quart of water, all are curative. Subsequently the affected parts should be rubbed with the following lotion, diluted with 1 or 2 parts of water:—

R Betanaphthol, 5 parts.
Glycerin, 10 parts.
Alcohol, 100 parts.

M. For a lotion. To be diluted.
(Brocq.)

Or this may be substituted:—

R Thymol, 1 gram (15 grains).
Tannin, 5 grams (75 grains).
Camphorated brandy, 200 grams
(6 $\frac{2}{3}$ ounces).

M. Lotion.

Subsequently the feet should be carefully dried, and powdered with talcum, starch, or bismuth subnitrate, or with the following, the official foot-powder of the French army:—

R Salicylic acid, 3 grams (45 grains).
Starch, 10 grams (150 grains).
Powdered talc, 87 grams (3 ounces).

M. Foot-powder.

The following may be preferred:—

R Salicylic acid, 3 grams (45 grains).
Powdered alum,
Betanaphthol, of each, 5 grams (75 grains).
Sodium borate,
Powdered starch, of each, 10 grams (150 grains).
Powdered talc, 67 grams ($2\frac{1}{4}$ ounces).

M. Foot-powder.

A novel prescription is:—

R Coal-tar, 5 parts.
Plaster of Paris, 100 parts.

M. Dusting-powder.

Another excellent and simple formula is:—

R Bismuth subnitrate, 15 grams (4 drachms).
Sodium salicylate, 5 grams (75 grains).

M. For external use.

These powders should also be dusted into the socks and shoes. Every week or so the following should be rubbed in between the toes:—

R Red lead oxide, 1 gram (15 grains)
Liquid lead subacetate, 29 grams (7 drachms).

M. Lotion.

Any local hyperidrosis will yield rap-

idly to a combination of the foregoing. (New York Medical Journal and Philadelphia Medical Journal, August 8, 1903.)

INFLUENZA, NERVOUS DEPRESSION FOLLOWING.

Among the sequelæ of influenza one of the most important and remarkable is the extreme depression from which many patients suffer even in cases where the attack of influenza has been slight. A short time after convalescence begins the patient complains of insomnia, great weakness, and loss of appetite for all kinds of food. On getting up he is immediately attacked by giddiness; there is a tendency to fall forward; the least movement may bring on vomiting of a particularly mucous viscid material. He is thrown into a profuse perspiration, and is glad to return to bed. Any muscular effort may be attended with dyspnoea. In less marked cases the patient may be able to walk a little distance, but after a short time the feeling of intense weakness which is characteristic of this state brings him to a stop, and dangerous syncope may result. The gastric symptoms in such cases are always prominent. In many instances mental symptoms are also present. Any mental work is impossible, and reading soon causes fatigue. Memory is considerably affected, the patient forgetting the names of objects. He is inclined to take an exaggerated view of all his symptoms, and the fear of impending death may greatly trouble him. This state of nervous depression may continue for several months. The treatment of such cases is important, and among the best means is the exhibition of strychnine and caffeine. The former may be given in the usual doses, or as arseniate of strychnine in small doses. In the worst cases a sub-

cutaneous injection of strychnine is necessary. Preparations of caffeine have a more tonic effect in these cases than ether. It may be given in conjunction with benzoate of soda or else as a subcutaneous injection dissolved in distilled water with salicylate of soda. Mancel (*Thèse de Paris*; *British Medical Journal*, July 18, 1903).

IODIC PURPURA.

The writer reports the case of a man, aged 59, who was admitted to hospital suffering from a swelling in the sternal region. As this was evidently gummatous, potassium iodide and liquor hydrargyri perchloridi were given; after three doses (amounting to 15 grains of the one and 2 drachms of the other) the medicine had to be discontinued on account of violent vomiting. This having been subdued by lavage, the iodide was recommenced a week later. After taking 20 grains he was suddenly seized with severe pains in the extremities. An extensive purpuric eruption rapidly developed, he became collapsed, and in thirty hours was dead. There was slight vomiting. Postmortem, recent ulcers—becoming gangrenous in places—were found in the stomach and small intestines, particularly the duodenum. The author considers that purpura is due to direct injury to the endothelial cells of the blood-vessels, impairing their function, and that in the case under notice it might have been due to the elaboration of a combined poison by the joint action of potassium iodide and a factor constructed directly or indirectly by tissue-metabolism. He further holds that all cases of purpura can be ascribed to similar poisons in which the factor potassium iodide is replaced by toxins, some of bacterial origin, the other factor being now more, now less, evident. J. B.

Cleland (*British Medical Journal*, July 11, 1903).

LATERAL CURVATURE OF THE SPINE, TORSION IN.

A right dorsal curve should be twisted to the right, which should curve the spine to the left; should it be a high dorsal curve the twist should be given in full flexion of the spine. With regard to cases with fixed curves it is not possible as yet to say what the therapeutic value of torsion is. Postural lateral curves may apparently originate (*a*) in the flexed position of the spine; (*b*) in the extended position of the spine; (*c*) in twisted positions of the spine in which the lateral curve is only symptomatic of the twist. In these cases torsion movements and passive torsion of the spine are of therapeutic value. R. W. Lovett (*Boston Medical and Surgical Journal*, August 6, 1903).

LUMBAR PUNCTURE.

Lumbar puncture (*a*) affords the patient relief from pain, headache, etc.; (*b*) coma is diminished and consciousness may return after coma has been established through the increase of intracerebral pressure; (*c*) lumbar puncture may indicate the necessity or otherwise for operation; (*d*) it has been a definite aid toward recovery in cases of post-basilar meningitis. On the other hand, for the practitioner: (*a*) it may correct or confirm a diagnosis; (*b*) by rendering less intense a coma from excessive intracranial pressure it obviates the necessity for nasal feeding and other tedious and dangerous procedures. The operation is unattended with risk as long as it is carefully performed and rigid antisepsis insured. H. Rhodes (*British Medical Journal*, July 11, 1903).

MALARIA.

Referring to the Shattuck Lecture before the Massachusetts Medical Society, June 9, 1903,—“The Sources, Favoring Conditions, and Prophylaxis of Malaria in Temperate Climates, with Special Reference to Massachusetts,”—the writer concludes that probably only tertian malarial fever can be propagated in Massachusetts. It is brought into this State in the blood of individuals arriving from permanently infected localities. It is impossible to say at what stage of the disease or relative immunity the mosquito may become infected. Probably the gametes are not formed early in malaria, and relatively immune persons are, therefore, in the most danger, especially after fresh exposure, as in them gametes form very promptly and without causing much or any clinical disturbance. Infection spreads most rapidly, in our latitudes, in crowded districts near breeding-places of *Anopheles*. Infection is limited by relative isolation of inhabitants, by protection through quinine, by protection against mosquitoes, and by the absence of persons partially immunized by long exposure in endemic localities. Sewage contamination of surface-waters probably favors the spread of malaria by increasing the food-supply of the mosquito-larvæ and by injuring their enemies. The spread of malaria is best controlled by exterminating mosquitoes. The disease is of sufficient importance to be made a notifiable disease. In times of epidemic malaria it may be desirable to specially supervise infected persons, and the blood of all ailing children should be examined for the parasite. Two questions demand solution: (a) the relation of the species *Anopheles punctipennis* to the parasite of tertian fever; (b) the infecting power of fresh cases of tertian malaria as compared with re-

lapsed and with cases in partially immunized individuals from malarial countries. Theobald Smith (New York Medical Journal and Philadelphia Medical Journal, July 16 and August 22, 1903).

MENSTRUAL PSYCHOSES.

The writer distinguished several varieties of psychical disturbances attending menstruation, viz.:—

1. Psychical manifestations accompanying the first appearance of menstruation. There may be from two to ten or twelve attacks of the melancholic or maniacal type, and the prognosis is generally good as soon as the menses become regularly established.

2. Psychoses attending ovulation. These are noted in neurotic individuals, usually as the result of a nervous shock, and appear as a severe, but transient, mental confusion, which is apt to recur each month, even in cases of amenorrhœa. These disturbances cease during pregnancy and after the menopause. An hereditary tendency is noted in most cases, and the attack may simulate violent mania or melancholia. They last from five to fourteen days or more. Suicidal impulses are sometimes present. The writer recommends sedatives, hypnotics, baths, and icepacks, while in the intervals the mental and physical habits are regulated. The prognosis is good, except in cases in which mental degeneration is present. Castration may be considered as a last resort.

3. Cyclical menstrual psychoses are coincident with the menstrual wave, and appear in the form of premenstrual attacks of maniacal excitement or actual insanity, which increase in severity until the height of the wave, changing to depression and melancholia with its subsidence. This type is of considerable medico-legal importance, since the sub-

ject may entertain violent feelings against society, leading to criminal acts, such as theft, arson, or even murder. Hence the writer advises that in the case of female criminals careful attention should be directed to the fact if the crime was committed at the time of menstruation, and if she had been habitually subject to mental disturbances at this period. Krafft-Ebing (*American Journal of the Medical Sciences*, August, 1903; from *Centralblatt für Gynäkologie*, No. 8, 1903).

NAUHEIM TREATMENT.

The writer divides the cases susceptible of benefit by this treatment into four groups: 1. Those which will be cured or very greatly benefited by the treatment. In this group are included (*a*) the dilated, enfeebled, or irritable heart, a sequel of influenza; (*b*) the enfeebled heart produced by raised arterial tension in those patients suffering from rheumatic or gouty diathesis (for this class a course of treatment every twelve months for two or three years is recommended); (*c*) cases of heart enfeeblement from excessive smoking, typhoid fever, malaria, etc. 2. Those cases which cannot be cured, but can be greatly benefited. In this group are cases of rheumatic and gouty origin in which the valves have been permanently injured and there are signs of commencing heart-failure. 3. Doubtful cases. This includes the more advanced forms of valvular affections of any origin where the patient is losing ground. 4. Unsuitable cases: (*a*) habitually heavy drinkers; (*b*) those suffering from syphilitic disease of the heart; (*c*) those with marked degeneration of the vessel-walls; (*d*) those presenting typical symptoms of aortic regurgitation; (*e*)

very old people. L. C. T. Thorne (*Lancet*, July 18, 1903).

NEURALGIA, OPERATIVE TREATMENT OF.

The cause of sciatica or other neuralgia is in many cases the length and narrowness of the bony passage through which the nerve emerges. When this passage is small, slight traumatism may induce concussion of the bone at this point and irritate the vasodilating nerves and the walls of the accompanying vessels. The result is an overfilling of the vessels, venous stasis, with consequent compression of the adjacent nerve and pain. In 5 cases of sciatica in which the writer operated he found the veins accompanying the nerve darkly congested. He proceeded to enlarge the bony canal, cutting away the lower section of the sacro-iliac synchondrosis, and thus allowing the nerve to rest on the soft parts. There has been no recurrence of the neuralgia during the two years since in any instance. Trauma was noted in the etiology of all these cases and in that of 16 other cases of sciatica he has since encountered. He operated on a sixth patient, a diabetic, who has since died in coma, and on 2 others. In 1 he removed a myxosarcoma, the size of a goose-egg, on the first sacral nerve. The sciatica was the only sign of its presence, and the operation undertaken on this account revealed the neoplasm and allowed its removal in an early stage. In his eighth patient the neuralgia was in the second branch of the trigeminus, and on opening up its bony passage there evidences of pronounced venous stasis were discovered. The nerve was allowed to rest on soft parts alone by excision of bone, and the neuralgia was banished. The patient died not long after from perforation of a duodenal ulcer. The operation

showed that the nerve was apparently intact, and confirmed the assumption that the pain would cease when more favorable conditions for circulation were provided. The measure should at least be tried before excising the nerve or a ganglion in such cases. Bardenheuer (*Deut. Zeit. f. Chir.*, vol. lxvii, Esmarch Festschrift; *Jour. Amer. Med. Assoc.*, June 20, 1903).

OESOPHAGEAL "PRESSURE-POUCH."

The symptoms in this condition are similar in every case, and are as follows: Return of fragments of undigested food, not immediately after food has been taken, but many hours or even a day or two afterward. Gurgling up of gas from the throat, particularly when pressure is made on the left side of the neck, low down. There may also be distinct bulging in this situation when food is taken; but this is not constant. A bougie is arrested about nine inches from the teeth. If a curved metal instrument is used, the end can often be felt in the posterior triangle of the neck. Wasting and pressure-symptoms (cough) may also be present. H. T. Butlin (*British Medical Journal*, July 11, 1903).

OVARIAN TRANSPLANTATION.

The personal experience of the writer and a review of the literature suggested the following conclusions:—

1. The operation of homoplastic or of heteroplastic transplantation of the ovaries in women or in lower animals is no more dangerous if accomplished aseptically than any other small plastic operation on the appendages. (Morris, Dudley, Fish, Griegorioff, Frank, Arendt, Ribbert, Rubinstein, Glass, Maucelaire, Amico-Roxar, Monprofit, Foà, Knauer.)

2. Homotransplantation of ovaries in women or lower animals will prevent the

atrophy of the genitalia which usually follows castration. (Morris, Dudley, Fish, Griegorioff, Knauer, Lukaschewitsch, Foà, McCone, Maucelaire.)

3. Heterotransplantation of ovaries in women or lower animals will prevent the atrophy of the genitalia which usually follows castration. (Glass, McCone, Maucelaire, Schultz.)

4. Transplantation of ovaries from one species into another may result in preventing the ordinary changes in the genitalia that result from castration. (McCone, Lukaschewitsch, Schultz.)

5. Menstruation will continue in women and monkeys after homoplastic transplantation of ovaries. (Morris, Glass, Dudley, Frank, Maucelaire, Martin, Halban, in monkeys.)

6. Conception has followed homotransplantation in animals. (Griegorioff, McCone, Amico-Roxar, Maucelaire.)

7. Conception has followed heterotransplantation in animals. (McCone, Maucelaire.)

8. Conception has followed heterotransplantation of the ovaries in women. (Morris, Frank.)

9. Transplanted ovaries in other locations than the normal will maintain their vitality, functionate, and prevent the ordinary sequelæ of castration. F. H. Martin (*Chicago Medical Recorder*, July 15, 1903).

PARAMYOCLONUS MULTIPLEX (FRIED-REICH'S TYPE).

The term paramyoclonus multiplex, or myoclonus multiplex, should be reserved for that form of myospasm characterized by multiple, spontaneous, isolated contractions of individual muscles. This type is peculiar and distinctive, and receives its most logical explanation in a disturbance of the spinal centers. It should be carefully separated from the

cerebral type of the myospasms, which are characterized by movements of a more or less co-ordinated type, as are observed in the *maladie de tic, tic convulsif*, and the convulsive tremor of Pritchard and Hammond. The contractions of paramyoclonus multiplex are closely related to the myokymia and fibrillary contractions. Paramyoclonus multiplex may occur as an idiopathic or a deuteropathic affection, in the latter complicating various organic and functional diseases of cerebral and spinal origin. J. R. Hunt (Journal of Nervous and Mental Disease, July, 1903).

PARATYPHOID.

The writer concludes from an experimental study of paratyphoid that: 1. Cases of paratyphoid produced by the paratyphoid bacillus may be surely distinguished from typhoid fever. The paratyphoid bacillus, in its behavior in agglutinating, differs sharply from other members of the group of "coli-typhoid" germs, and particularly from the bacillus enteritidis. The various sub-type of paratyphoid bacillus may also be distinguished from one another by agglutination. 2. As the paratyphoid bacilli include a number of types in regard to agglutination, it is necessary, in serum diagnosis, to test simultaneously the action of serum upon the typhoid bacillus, and also upon the paratyphoid bacilli obtained from the patients themselves or from other patients. While the bacteriological diagnosis of a case of typhoid is always desirable, in paratyphoid it is necessary. It is desirable to adopt a method of obtaining rapidly and easily pure cultures of typhoid or paratyphoid bacilli from the patient. Cultures of typhoid and paratyphoid bacilli can be obtained from the feces, urine, blood, veins, and from the rose-spots.

In the beginning of the disease we must resort to the isolation of the bacilli from the feces, while the other methods are available only during the second week. The best method of growing these cultures, however, is from the blood, especially from the blood of the veins. V. I. Bielyaekk (New York Medical Journal and Philadelphia Medical Journal, August 1, 1903; from Roussky Vrach, May 24, 1903).

RADIUM, FURTHER OBSERVATIONS IN REGARD TO.

The possibilities of such mysterious forces as those possessed by radium present an attractive field of speculation for the physician. May not the radiant energy emitted by radium possess pathogenic as well as curative, destructive as well as stimulating, powers on cells and cellular processes? Perchance, it may be forces of this kind that upset physiological laws of cellular activity, and lead to abnormal proliferations of various kinds. But questions of this kind are not yet ripe for discussion. Actual experimental studies must furnish the necessary basis of facts from which it may be permitted to draw further deductions. Danysz (Comptes Rendus de l'Académie des Sciences, cxxxvi, 461-64, 1903) found that radium destroys the skin of guinea-pigs and rabbits, but subcutaneous and muscular tissue do not seem so sensitive as skin. The nervous tissue is also sensitive to its action. A sealed glass tube with salts of radium placed against the skin over the spine is followed by death in young animals. In older animals the osseous tissue seems to protect the spinal cord against the radiations. The effects of rays of radium on bacteria have not been studied extensively as yet, but both Danysz and Bohn show that various larvæ and embryos

are profoundly modified in their growth, many being killed when subjected to the radiations, others developing into monstrosities because of unequal stimulation. Bohn further finds that radium exercises an especially intense action on tissues or cells in proliferation; nonfertilized eggs may undergo more or less parthenogenetic development and give rise to atypical formations. It has been found, too, that in animals whose skin was burned by the rays, the hair, in some cases, appeared to be forced into rapid growth. It seems that various effects are obtainable, depending on the tissue or cell exposed, as well as on the quantity and quality of the rays. Further experiments, no doubt, will yield even more interesting and conclusive results. We have commented on the announcement that in Vienna cancer has been cured by means of radium. In this particular direction much work will surely be done, and we may expect interesting developments. Editorial (*Journal of the American Medical Association*, August 1, 1903).

RADIUM-RAYS, PHOSPHORESCENT POWER OF.

It has been asserted that totally blind persons are able to see the radium light. They not only perceived the phosphorescent radium screen, but were able to distinguish the silhouettes of coins, keys, etc., placed on the screen, the same as a seeing person. These facts can be explained in two ways: Either the radium rays passing through the tissues reach and irritate the optic nerve and stimulate the relics of vision left in it—in which case the sound eye would also experience the same tendency, and the blind person, after a little practice, might be able to perceive any dark object on a bright background. Tests in

this direction have already been made, and Heller reported two years ago that it is possible to save some degree of vision by exercises of this nature. The same results can be obtained with any light, and the radium has nothing specific to do with the phenomenon. It was observed with the Roentgen rays and interpreted in the same erroneous manner at first. The other, and the correct explanation, they believe, is that the phenomenon is due to the transformation of the energy of the radium-rays into objective phosphorescence. This power of inducing phosphorescence in other bodies is possessed by the radium-rays to a remarkable extent. No screen or chemical is required; any animal tissue whatever—hairs, bone, muscle, a drop of water, a scrap of sugar, but especially the human epidermis—is rendered more or less vividly phosphorescent under the action of the radium-rays. They believe that no one else has called attention to this property of radium. This explanation of the vision induced in the blind by radium is confirmed by the localization of the phenomenon. When the radium is applied to the right, the visual sensation is on the right side; applied to the left, above or below, it is respectively on the left or above or below to correspond. The radium-rays evidently render the sclerotic phosphorescent, and this phosphorescence is seen by the point of the retina opposite to it. When a visual sensation is experienced from compression of the eyeball, the source of the light is referred to the point opposite that from which the light compression proceeds. This is directly the reverse of what is experienced from the radium. G. Holzknacht and G. Schwarz (*Journal of the American Medical Association*, Aug. 1, 1903; from *Wiener klinische Wochenschrift*, vol. xvi, No. 25).

RENAL DECAPSULATION.

The writer has investigated the changes which arise in the kidneys of rabbits after removing the fibrous capsule. These experiments were performed with a view of confirming the theory of Edebohl's, Rovsing, and others, to the effect that the removal of the capsule would create a new blood-supply to the renal parenchyma and would thereby tend to degenerate renal tissues affected with nephritis. In spite of the fact that the animals with decapsulated kidneys survived the operation only a short time, the author published his incomplete results, because he noticed very unfavorable effects on the parenchyma of the kidney after decapsulation. He believes further experiments on animals necessary before decapsulation should be employed in nephritis in man. In his own series of animals the capsules were removed through either the abdominal or the lumbar incisions. Six days after the removal of the capsule the minute portions of fibrous capsule that remained showed a marked proliferation of the connective tissue into the parenchyma and around the urinary canals. After twelve days the entire surface over which the capsule had been removed was the seat of a marked connective-tissue growth which did not penetrate very deeply into the interior of the kidney. The tissue at the periphery of the kidney evidently undergoes marked changes of atrophy and connective-tissue formation, but no new vessels are formed. B. F. Bontch-Osmoloffski (*New York Medical Journal and Philadelphia Medical Journal*, August 1, 1903; from Roussky Vrach, May 24, 1903).

RETINITIS PIGMENTOSA.

The writer refers to a case in a man, 54 years old, who, with the exception of

his ocular affection, was apparently in the best of health. The following interesting points are noted: 1. The accurate and comprehensive family history which could be traced for over a century. 2. The absence of any history of consanguinity. 3. The absence of serious ocular disease in any other member of the family. 4. The long retention of serviceable central vision despite contraction of the visual fields to within five degrees of the fixation-point. 5. The remarkable preservation of accurate color-perception and sense of color-difference. 6. The noteworthy compensatory development of the sense of touch and hearing, estimation of distance, sense of location, etc. W. L. Pyle (*American Medicine*, August 8, 1903).

SARCOMATOSIS CUTIS.

Sarcomatosis cutis (Kaposi), which is now designated as sarcoid growths of the skin, is clinically recognized as having its own individual characteristics. It chiefly attacks adults. The initial lesions are small papules deeply seated in the skin. These gradually develop to a certain size, when some break down, suppurate, and end in exuberant granulations. Histologically it consists of a round-cell infiltration primarily existing in the deeper layers of the skin, around the blood-vessels, hair-follicles, sebaceous glands, and lymphatic spaces. While this is suggestive of true sarcoma, it may present the inception of granuloma. The etiology is at present obscure; apparently we have to do with an infectious disease. While there is a strong resemblance microscopically to mycosis fungoides, the clinical appearance is so entirely different that one need not hesitate to exclude that affection from consideration, it being separate and distinct from this. The theory of syphilis is con-

tra-indicated by the clinical appearance and therapeutic test. Lymphodermia and blastomycetic dermatitis are excluded by the microscopical findings. Carcinomatosis cutis is also ruled out by the microscope, although the clinical appearances in the two are very similar. Taking into consideration the spontaneous disappearance of the tumors, the limitations of the growths to the skin without any remarkable tendency to infiltration of the surrounding tissue, the noninvolvement of lymphnodes or metastasis, and the fact that the malady remains a cutaneous disease, the conclusion is forced on us that the present case far more closely resembles granuloma than true neoplasm. G. W. Wende (*Journal of Cutaneous Diseases*, July, 1903).

SKIN DISEASES, RADIUM TREATMENT OF.

Exhibition of several cases of cutaneous affections treated with the radium-rays, one application each. One was a case of psoriasis gyrata of the entire body, which had been very nearly cured with the x-rays and the cure was completed by the application of the radium. Very slight and brief application of the x-rays (2 H) are enough to cure psoriasis. The patches heal, while the sound skin is not affected by the applications. The same is true of the radium. A minute's application was amply sufficient. Recurrences will probably follow as after every method of treating psoriasis. In a case of lupus hypertrophicus one patch was cured with the x-rays and one with the radium. The latter was applied to the spot twice, at a month's interval, for seven minutes at a time. The similarity of the action of the two kinds of rays was here striking, and the radium was superior, if anything, and can be applied to the mucous membranes. An epitheli-

oma on the cheek also rapidly subsided till only a trace of infiltration around the edge still persists after three applications of the radium capsule for five minutes each. The most remarkable of all his cases was an extensive flat telangiectasia covering the entire left arm. The writer comments on the difference between the Becquerel and the Roentgen rays, laying stress on the histological studies of ray dermatitis which the Neisser school has published, Scholz's thesis in particular. The latter is a complete monograph on the histology of Roentgen dermatitis in man and animals. He has shown that the Roentgen rays cause degenerative processes in the cells of the intima of the blood-vessels. The action of the radium-rays seems to be identical, only much more intense. As a consequence of the degeneration there ensues a rapid dilatation of the capillary and precapillary vessels. In the case of telangiectasia described the radium capsule was applied for ten minutes each at eight various points on the nævus, while the parts between received only the small quantity of the rays that passed through the sides of the capsule. When exhibited, at these eight points there were corresponding small patches, 0.5 centimeter in diameter, of perfectly normal, tender, white skin in the midst of the nævus vasculosis. Applications of the Roentgen rays had no such effect, but merely slightly blanched the points. G. Holzknecht (*Journal of the American Medical Association*; from *Wiener klinische Wochenschrift*, vol. xvi, No. 27).

SPLEEN, ABSCESS OF THE.

Abscess of the spleen is rare, but not as rare as we are led to believe. It is most likely to occur after malarial or typhoid fever, because of the hyperæmic

condition of the spleen in these diseases. Absence of fever does not preclude the possibility of an abscess. Early diagnosis and operation are very essential and give a fairly favorable prognosis. Splenectomy is the operation of choice, but its application is quite limited. Preliminary aspiration is an unnecessary procedure, and its use should be condemned. W. M. Spear (*Journal of the American Medical Association*, August 1, 1903).

SYPHILIS, ETIOLOGY OF.

It requires but the briefest survey of the literature of syphilis to realize the stupendous amount of work that has been done for half a century in searching for a microbic cause of the disease. It seems as if most of the individuals who have begun the search succeeded in finding a microbe, and under the force of enthusiasm, rather than of satisfactory proof, many have claimed the rôle of specific etiology for their organism.

The name of Douné is one of the first, if not the first, to be associated with the microbic etiology of syphilis, but this was more or less unintentional on his part, apparently, as his partisans state that he did not believe certain organisms he found in the discharges of syphilitics were the cause of the disease. His work was published in 1837. No noteworthy contribution to the subject was made until 1869, when Hallin claimed that a micrococcus which he found constantly in the blood of syphilitics caused the disease. This was a queer organism. It was found in the red blood-cells, which became enlarged and vacuolated as a consequence of the invasion, and after a time they acquired ciliary elongations. It will be remembered that a few years ago Arnold described a number of morphological peculiarities which develop

in red blood-cells as a result of standing. Hallin's observations in syphilis probably concerned some such artifact. In the same year Klotzsch found certain "spores" in the blood and skin lesions and cultivated them in broth; but his cultures were not taken in the light of confirmatory evidence by his contemporaries.

The "crypta syphilitica" of Salisbury and Brühlkens, which was published in 1870, was followed shortly by two discoveries of meteorlike career. Klebs, in 1870, described a remarkable organism, cultivated from syphilitic lesions, which was capable of growing either as a coccus or a bacillus, and often in peculiar and characteristic masses. It would seem probable that he had a mixed culture. However, he succeeded, to his satisfaction, in conveying syphilis to monkeys by inoculating this culture. He also infected monkeys with syphilis by direct transplantation of chancres. Then Latorfer held the attention of medical scientists for some months with his "corpuscles of syphilis." They were seen to develop in syphilitic blood which had been kept for a few days in a moist chamber. There seems to have been an interesting sitting of the Wiener Medicinische Gesellschaft at this time, when Latorfer volunteered to base the diagnosis of syphilis on an examination of the blood. The opportunity was given him, and he is said to have arrived at the differential diagnosis with considerable exactness in this way. But soon other observers found the same "corpuscles" in the blood in health and in various diseases, and the conclusion was reached that they were disintegration products, "granules of paraglobulin," as one writer said.

There appear to have been some equally successful observers in America

at this time. Bermann, of Baltimore, had found bacilli and micrococci similar to those of Klebs, in the sections of the tissues, particularly in the vessels. Some critics believed he was studying intravascular fibrin. Then there was the dramatic demonstration of the fungus of syphilis by Cutter, of Boston, at a meeting of the American Medical Association held in Chicago in 1878. He found mycelium in the chancres by the use of a $\frac{1}{50}$ and a $\frac{1}{75}$ objective lens.

In 1881 Aufrecht found a micrococcus or a diplococcus in papular lesions, and Obraszow a similar organism in lymph-glands. The findings of Birch-Hirschfeld, also of Peschel, in 1882, differed little from some previous observations. They found groups of cocci in all gummatous tumors except those which were cicatricial, in mucous patches, papules, and in indurated chancre. The best results were obtained by a study of fresh tissues in either acetic acid or potassium hydrate. Those who have used these solutions in the study of fresh tissues will recognize how closely various granules may simulate cocci. In the same year the results of Martineau were published. He introduced hogs into the experimental study of syphilis, claiming to have transferred the disease to them by inoculating cultures of hard chancres. These cultures were made by placing the chancre in a liquid medium at brood-oven temperature, a growth of micrococci resulting. The overlying liquid was used in the inoculations. The hogs underwent a papular eruption and the microbes could again be cultivated from the blood; they resembled somewhat those described by Klebs. He also gave monkeys a hard chancre on the prepuce which was followed in time by a characteristic papular eruption. Many others since then have obtained micrococci

from syphilitic lesions, but there were also published valuable negative results, especially by Köbner (1883) and Neumann (1883), who failed utterly in the attempt to inoculate animals with syphilis.

Of all the micro-organisms observed or described in syphilis the bacillus of Lustgarten (1884) has been accorded the most favorable reception up to the present time. It will be remembered that this organism resembles the tubercle bacillus in morphology and staining properties, but is more easily decolorized by acids. He found it in small numbers in the primary sores and in internal organs in all of sixteen cases examined. It has never been cultivated artificially. Confirmatory work on this organism was undertaken by several observers. De Michele and Radice found it in forty-five out of sixty-four cases examined. It seems that Doutrelepon and Schutz had carried on studies contemporaneously with Lustgarten, and shortly after the latter's report described an organism resembling or identical with the Lustgarten bacillus (1885). It was found in two initial scleroses, two broad condylomata, a papule from the chin, and a gumma. It occurred singly or in small groups, especially at the periphery of lesions, but often many sections contained no organisms.

De Giacomi and also Gottstein (1885) were able to demonstrate the Lustgarten bacillus in a number of cases in both initial scleroses and gummata, and offered some improvements in the staining methods. Many others have been unable to find the organism, notably Sabouraud (1892), who after a study of twenty cases concluded Lustgarten had found only a pretty stain for the tubercle bacillus. This may not have been entirely just to Lustgarten.

More recently interest in the etiology of syphilis has revived. Von Niessen since 1898 has been publishing assiduously descriptions of his organism and his animal inoculations. As this is a pleomorphic organism, usually a streptobacillus, he is willing to concede that Klebs, Lustgarten, and others may have seen one or another of its forms. It stains by Gram's method, is easily decolorized by acids, has endospores, and is found in all lesions and in the blood in all stages of syphilis, and it is supposed under no other conditions. He has been able to cultivate it, to produce syphilis in rabbits by injecting the culture, even to the extent of causing hereditary syphilis (abortion). The bacillus was found in the foetal lungs, and a papular eruption and ulcerated buttocks were present. Since the organism was present in all stages of the disease, he concluded that syphilis is absolutely incurable. Von Niessen has met a great deal of ridicule among the Germans.

In 1901 de Lille and Julien cultivated a Gram-staining bacillus from the blood which was pathogenic for guinea-pigs and frogs and was agglutinated by the serum of syphilitics. The hog has been used for inoculation with syphilitic blood and excretions especially by Adrian and by Hügel and Holzhauser, and they claimed that they caused a generalized papular eruption which appeared about four weeks after the inoculation.

Joseph and Piorkowski have attacked the subject in a novel way. Since it seems probable that the sperm of syphilitics may infect a woman and convey syphilis to offspring, they concluded to study the sperm bacteriologically. They thought also that placental tissue might logically be a good culture-medium. This was accordingly inoculated with

the sperm of syphilitics and with that of healthy men as controls. Subtracting everything that was considered contamination, they centered their attention on certain clear colonies made up of a motile bacillus having the morphology of the diphtheria bacillus and the size of the subtilis bacillus. It stains by Gram's method, is not acid-proof, and degenerates soon, with the formation of metachromatic granules. It has since been cultivated on various ordinary media. The positive findings occurred in about forty cases in stages varying from five weeks to five years of the disease, and was absent in the sperm of fifteen normal cases; positive results were secured also in twenty-seven hard chancres, in papules, mucous patches, and other lesions. No satisfactory animal experiments have been obtained.

The medical profession appeared to have been little impressed with the protozoic cause which Max Schüller discovered about two years ago. He incubated syphilitic tissue and found the development of bodies resembling protozoa, which some German critics considered cork-cells. The fact that he found similar "organisms" in carcinoma and sarcoma added no strength to his theory.

We may say that now we are confronted with the bacillary theory of syphilis, in contradistinction to the micrococcus theory which prevailed in previous years. It appears probable that several recent observers have been studying the same bacillus; particularly would this seem true in regard to the Gram-staining organism. And one may say that circumstantial evidence against this form of organism is accumulating rather formidably. But unfortunately confidence is often lessened in the work published, because of hasty conclusions on the part of the investigators. A pap-

ular eruption in a hog or rabbit is surely not easy of recognition, and it is possible that many organisms may be able to produce it. And there are perhaps many organisms which would cause a rabbit to abort, as any infectious disease might; and excoriations on the buttocks of an immature, thin-skinned foetal rabbit may have many explanations. Moreover, it does not follow that the specific germ for syphilis would be pathogenic for animals in the same way as in man. In pathology there are many instances where this is illustrated. Then the agglutination test for specificity of an organism cannot be relied on unless it is most carefully controlled by experiments with normal serum.

In this day of rapid scientific progression it is not to be forgotten that, with new methods of differentiation, new burdens of proof have to be met. Editorial (*Journal of the American Medical Association*, July 25, 1903).

TEETH, EXTRACTED BY AN INJURY, REPLACED AND RETAINED IN A HEALTHY CONDITION.

The writer refers to an instance of accidental fractures to the deciduous teeth in which Nature demonstrated her power to compensate, and to several instances in which children's teeth have been forced from the alveoli by accidental means, clinging by a slender piece of tissue only, and removed without any attempt to save them. It is equally as important to know what not to do in such cases as it is to know what to do; conservatism will frequently bring success. The case is described as follows: "May 6, 1902, I was called by Dr. A. R. White to see his granddaughter, Marion A., aged 16 months. She was seated in a hobby rocker which had the representation of a horse on either side, between

the heads a round bar, and below it a wooden tray which moved on an axis. During a period of violent rocking when the head was inclined farther forward than usual the four lower incisors caught between the edge of the tray and the cross-rod; during the consequent backward movement the teeth were forced from the alveoli and the labial surface of the teeth were in contact with the lower lip. The gum-tissue on either side was lacerated to the alveolar margin of the maxillary bone. There was a slight attachment of tissue on the anterior surface, which in this position would in reality be the under surface, so that it comprised a plate with the apices of the roots completely detached and extending over the inner margin. An elevation on each side of the wound indicated that the canines were upon the verge of eruption. There were no teeth to which a mechanical appliance could be attached. The hæmorrhage was no more than would result from the extraction of several teeth. The injured parts and mouth were treated with an antiseptic solution consisting mainly of boric acid, the teeth replaced, and after firm pressure for five minutes were kept in place by a pledget of cotton saturated with the same solution, but the customary head-bandage was ineffectual. A combination of bromide of sodium and hydrate of chloral was given to produce quietude. The diet was liquid.

"Two days later the child fell and produced the same condition of affairs as existed at my first visit. At the onset I had little confidence of success, and now much less. I proceeded as before in dressing the injury, and after a few weeks the teeth were firm, and at this date all are uniform and in a healthy condition.

"The relation of the teeth to the max-

illa and the cause of their vitality is a matter of interest in considering the outcome of this case. The periosteum of the alveolus also covers the tooth to its neck, and at this point is continuous with the structure of the gum-tissue. The central cavity which extends into the root abounds with connective tissue containing nerves and blood-vessels. A nerve and artery enters the apical foramen and ramifies all portions of the pulp—probably more abundantly at the periphery; a venous system returns the blood to the general circulation. It has been said that, when the pulp and its nerve- and blood- supply have been disconnected, the pulp dies. In this case the teeth were replaced and remained in a healthy condition, which seems to indicate that a reunion took place.”

The writer submits the following conclusions:—

1. Nature even under adverse circumstances will show an inclination to compensate in case of injury, especially when there is ample vitality, as in childhood.

2. The preservation of the teeth in this instance prevented depression, which during the succeeding four to six years would have changed the expression of the features.

3. The cutting edges not being in apposition—in fact, the absence of the incisors would have made mastication imperfect and consequently impaired digestion.

4. The successful readjustment probably prevented a destruction of the germs of the permanent teeth and avoided a deformity and malposition. S. E. Earp (Paediatrics, July, 1903).

TOXINS AND ANTITOXINS.

The writers conclude that there is no evidence to assume a multiplicity of

qualitatively similar poisons derived from bacteria which possess different toxic virulence and varying avidity for antitoxins. The action of toxins is not to be regarded differently from that of other poisons circulating in the body. The transformation of toxins into non-toxic combinations (toxoids), with no change in the affinity for antitoxins, may be possible, but is not proven. Toxins and antitoxins possess weak chemical affinities and together form easily dissociated combinations or molecular combinations in varying proportions. This fact explains the long incubation of toxic action.

The formation of antitoxin has nothing to do with the toxic action or with cell-immunity. This is proven in various ways, such as the fact that many innocuous substances evoke the formation of antibodies, and many animals not susceptible to certain toxins nevertheless create antitoxins; further, despite the abundant presence of antibodies, susceptibility to toxins may remain and even increase; cell-immunity can be acquired even in the absence of antibodies; and, last, the formation of the antibodies occurs in an entirely different place from that where the action of the toxins occurs.

Specific antibodies are not parts of the normal organism. They are not formed until foreign substances are introduced and are more like internal secretions. The nontoxic combination of toxin and antitoxin is incapable of evoking the formation of further antitoxin, for the chemical character of the combination is entirely different from that of the uncombined substances.

Finally, the ability to call forth antibodies depends upon some peculiar property, not yet known, of chemical character, residing in the toxins. An

essential seems to be, for antibodies as well as for toxic action, a chemical combination of the foreign substances with certain parts of the cell. M. Gruber and C. von Pirquet (*New York Medical Journal and Philadelphia Medical Journal*, August 22, 1903; from *Munchener medicinische Wochenschrift*, July 21, 1903).

TUBERCULOSIS OF THE MALE SEXUAL ORGANS, TREATMENT OF.

The writer reports continued success with this method of treating tuberculosis of the male genitalia. It includes what he calls "high castration"—that is, castration with evulsion of the vas deferens. Instead of dividing the vas at the ordinarily accessible point, he mobilizes and pulls steadily on it until it breaks high up. About four-fifths of the vas can usually be removed in this way, and his experience during nine years has demonstrated that the remaining portion soon heals. His method also includes direct injection into the vas deferens of a 10-per-cent. glycerin solution of iodoform. He injects 3 or 4 grams upward and 1 or 2 downward. Experiments on the cadaver show that the solution permeates the entire generative tract on this side, even distending the seminal vesicles. His experience also confirms von Bruns's, that tuberculosis of the generative tract is almost invariably ascending; so that by this method of high castration all or nearly all the morbid parts are removed and the rest soon heals when freed from irritation from below. He has treated 18 patients by this high castration, which he recommends for tuberculosis restricted to the testicles and vas alone. He supplements it with the intracanalicular iodoform injections when there is reason to think the entire tract is invaded, including the

seminal vesicles and prostate, or applies these injections alone. As a last resort, he ablates the tract the entire length of its course. The latter is very seldom necessary. All of his last series of 10 were cured, and all but 2 of the remainder. This is a total of 86.6 per cent. cured in contrast with Bruns's percentage of 46 per cent. cured by unilateral castration and 56 per cent. by bilateral, in 111 cases followed for three to thirty-four years. Simon has reported from Heidelberg 66.3 per cent. cured in 92 cases, and Kochen 26.3 per cent. in 45. Injurious after-effects that might be attributed to the castration were not found by Bruns in any of the 33 examined and by Simon only once in 34. The author details the particulars of his last series of 11 cases, and in the colored reproduction of the testicles, etc., and vas from a cured case he shows how the vas was diseased far above the point where it is usually severed. He has found that the epididymis is generally first involved and the vas next, the testicles being affected much less frequently than the latter. Only in the rarest cases were the prostate and vesicles also diseased. In 2 of his cases high castration plus a single intracanalicular injection resulted in the complete healing of the lesions above, which were to have been removed later in a second intervention. One was a man of 39 and one a boy 4 or 5 years of age. Büngner (*Jour. Amer. Med. Assoc.*; from *Beit. z. klin. Chir.*, vol. xxxv, No. 1).

TUBERCULOUS, THE PALATAL TONSILS AND THE UVULA AMONG THE.

Tuberculosis of the tonsils occurs frequently and the macroscopical diagnosis on the disease is difficult. The tonsil is more susceptible to the attack of tuber-

culosis than any other organ in the digestive apparatus. Infection of the tonsil is generally of extrinsic origin. The bacillus of Koch can be found in all parts of the tuberculous tonsil. It is sometimes found in the interior of the tonsil-crypts in individuals with whom the general organism shows no evidence of tuberculous lesion. Tuberculous infection of the tonsil may be due to penetration of the bacillus into either the lymphatic or the blood-current. The crypts and the epithelium which covers them are almost always infected by many species of parasites. The presence of the latter favors the penetration of different pathogenic agents, and this is especially true of the bacillus of Koch. Tuberculosis of the uvula is rarely observed. E. E. Escomel (Revue de Médecine, June 10, 1903).

TYPHOID FEVER IN CHILDREN, KERNIG'S SIGN IN.

A systematic search for Kernig's sign in fifty cases of typhoid fever occurring in the writer's service. Out of this number the reaction was noted in 22 cases—in 15 very clearly, in 7 slightly. He therefore concludes that in somewhat less than half of the cases (44 per cent. in his own series) this symptom is observable.

In all the cases in which the sign was noted cytoscopic examination of the cerebro-spinal fluid was made. Once only was a slight polynucleosis found. In all the other cases the liquid contained no cellular elements. Cultures remained sterile. The presence of Kernig's sign is therefore not sufficient to prove the existence of spinal meningitis in typhoid fever.

This phenomenon was noted in normal forms of the disease without the ataxic state, as well as in the ataxic

forms, and exceptionally in the adynamic forms.

In general, the sign was observed from the third to the sixteenth day of the disease; exceptionally after or before these limits. While usually disappearing about the thirteenth or fourteenth day, it may reappear or even appear for the first time at the development of a complication.

While the Kernig sign in this series of cases of typhoid was not necessarily of fatal prognosis, it is interesting to note that all the fatal cases were included in the number which showed the sign. It therefore seems proven that Kernig's sign cannot serve as a means of distinguishing typhoid fever in the child from cerebro-spinal meningitis, tuberculous meningitis, or meningeal accidents of other nature. Carrière (American Journal of the Medical Sciences, August, 1903; from Le Nord Médical, February 15, 1903).

TYPHOID, INFANTILE.

The typhoid bacillus may be transmitted through an abnormal, and possibly also through a normal, placenta, from the mother to the foetus. The resulting infection is in the nature of a general septicæmia and does not present the classical symptoms of extra-uterine typhoid. The foetus usually dies before or soon after birth. If, however, the child should not perish too soon, some of the pathological lesions of typhoid may be made out. Some imperfectly reported cases suggest that at times recovery may possibly occur. Infection of the foetus by a typhoid mother does not necessarily occur. It is possible, though there is no proof of it, that a foetus may go through an infection *in utero* and be born alive and well. Infantile typhoid fever, so far as our present knowledge

warrants the drawing of conclusions, has the same symptomatology as the typhoid of adult life. It is actually, and not merely apparently, less frequent in the very young than it is in adults. There is so far no satisfactory explanation for this. Theoretically infants should be more liable to infection than adults. J. L. Morse (Medical News, August 1. 1903).

UTERUS, FIBROIDS OF THE.

The palliative measures for the treatment of uterine fibroids are: 1. Oöphorectomy. 2. Cutting off of the blood-supply by obliterating the uterine arteries. 3. Dilatation of the cervix with curettage of the endometrium. 4. Electricity. 5. Medication, including the administration of the animal extracts. The writer reviews each one of these modes of treatment and gives the indications for their employment. As a rule, none of them are to be resorted to unless they are specially indicated. A. H. Goelet (Medical News, August 8. 1903).

VASCULAR TUMORS, BOILING WATER IN THE TREATMENT OF.

The treatment of nonmalignant vascular tumors introduced by Dr. John A. Wyeth, of New York, appears to be a distinct advance in the application of coagulating agents. In this instance the means employed consists in water at the boiling-point, and it has been tried by Dr. Wyeth in a number of cases for the last two years with most gratifying success. Several huge and disfiguring angiomas have been cured which were otherwise beyond the pale of surgical intervention. As with other coagulating injections about blood-vessels, Dr. Wyeth's method is presumably not free

from the danger of the formation of emboli, yet the severity and progressiveness of large angiomas is such that a certain amount of risk is justifiable. This risk is to be considered as distinctly less than that of cutting operations, and may undoubtedly be in great part, if not altogether, eliminated by compression of the large efferent vessels. The technique is simple enough, and consists, after a preliminary compression of the parts, in the introduction, at some distance from the mass, of an injection-needle, the point of which is well within the tumor, and as far beneath the skin as is practicable. Varying quantities of the boiling water, amounting in some cases to six or more ounces, are then injected at several points. This is always stopped as soon as tension is evident by bulging of the tissues and blanching of the skin. In the case of large tumors it appears to be advisable to avoid too thorough an injection, and rather to carry out the treatment in several sittings, owing to the danger of extensive sloughing and subsequent infection. Dr. Wyeth has applied this treatment in a case of sarcoma, but without curative effect, and purposes to test it thoroughly in tubercular adenitis before the formation of pus, as well as in bubo, ranula, small cysts, abscesses, and lipomata. Little as we think this method can prevail in the treatment of abscesses, Dr. Wyeth's further investigations will be awaited with much interest. The extensive use to which the employment of boiling water is properly destined is well shown by Dr. Ackard's treatment for fistula, quoted by Dr. Wyeth, in which the sinus, under anaesthesia, is injected, with excellent results. Editorial (International Journal of Surgery, August, 1903).

VESICAL DISEASE. PATHOLOGY AND PROGNOSIS OF.

1. The most frequent causes of diseases of the bladder are: (*a*) lesions of the central nervous system, causing dilatation; (*b*) septic processes of various varieties; (*c*) hypertrophy of the prostate. 2. In all conditions in which the spinal cord or central nervous system is involved, frequent and early catheterizations should be resorted to, to prevent the bad effects of overdistension or the possibility of cystic rupture. 3. Conditions of the bladder must greatly modify the prognosis of operative procedures for the relief of obstruction of the urinary flow; therefore the importance of cystoscopic and other examinations cannot be too strongly insisted upon. 4. Hypertrophy of the bladder-wall is due to four different processes, separate or combined: (*a*) inflammatory infiltration; (*b*) increase of the fibrous connective tissue; (*c*) smooth muscle hyperplasia; (*d*) infiltration by new growth. The clinical symptoms in hypertrophy of the bladder depend on which of these factors predominate. Greene and Brooks (Medical News, June 20, 1903).

WOUNDS, CLOSURE OF.

The use of sutures should be avoided save where necessity demands their use. Many wounds, in which sutures are now commonly used, may be coapted more perfectly, more speedily, and more safely without the use of sutures. Tension and moisture are the only conditions making sutures necessary. When sutures are necessary buried absorbable sutures should be used in all cases where there is no infection. The necessity for drainage does not contra-indicate the use of adhesive plaster for purposes of coaptation. It is doubtful if the use of non-

absorbable suture material should ever be used with a view to its remaining permanently. Nonabsorbable sutures are not necessary or advisable save in intestinal work and in the presence of sepsis. In those cases in which nonabsorbable sutures are necessary that method of applying them should be chosen which will subject the tissues to the least possible trauma, produce the fewest possible avenues for infection through the skin, and permit of their being removed when they have fulfilled their mission. M. F. Porter (Journal of the American Medical Association, July 25, 1903).

X-RAYS, EFFECTS OF, ON LIVING TISSUES.

The effect of prolonged x-ray exposures on vinegar-worms and protozoa is fatal. On the superficial capillary circulation the effect is like that of an irritant, producing vasodilation. The relief of pain in cases of deep malignant growths may be explained by this phenomenon. On the heart in cold-blooded animals x-rays act as an inhibitor. On growing plants the effect is distinctly stimulating — in fact, overstimulating. On full-grown plants it is not apparently harmful. Exposures produce immediately a local increase in the number of leucocytes in the blood. This is consistent with the irritant effect upon the skin and capillaries. On surface malignant growths the effect is curative in a great majority of cases, the cure not necessarily being the result of necrosis. On deep malignant growths there is no microscopical change to be found in the pathological or normal cell-elements. Excessive exposure on healthy skin produces sloughing of the superficial tissues, leaving a low-grade, sluggish ulceration, which heals slowly or not at all. Permanent dilatation of the capillaries and a scarcity of granulation tissue and

blood-vessels are common in such ulcerations. Clinical effects are not due to x-rays so much as they are to some other unknown, but closely allied, phenomenon. S. W. Allen (*Journal of Medical Research*, June, 1903).

THE REED MEMORIAL FUND.

ON the 15th of August a meeting was held in Bar Harbor of friends of the late Major Reed, M.D., U. S. A., to whom in a large degree is due the discovery of the mode by which yellow fever has been spread and the consequent suppression of that dire disease. Representative men were present from distant parts of the country and letters were received from various members of committees already appointed to promote the collection of a memorial fund in grateful commemoration of Dr. Reed's services. Important suggestions were presented from President Eliot, Prof. W. W. Keen, Prof. J. W. Mallet, and others. Dr. Daniel C. Gilman, chairman of a committee appointed by the American Association for the Advancement of Science, presided, and Dr. Stuart Paton acted as secretary. Among those who took part in the conference were Dr. W. H. Welch, of Baltimore; Dr. Janeway, of New York; Dr. Abbott, of Philadelphia; Dr. Herter, of New York; Dr. Barker, of Chicago; Dr. Putnam, of Buffalo; Dr. J. Madison Taylor, of Philadelphia; Dr. Fremont Smith, of Bar Harbor; and, besides these medical gentlemen, Bishop Lawrence, of Massachusetts; and Messrs. Morris K. Jesup, President of the New York Chamber of Commerce; John S. Kennedy, President of the Presbyterian Hospital of New York; and William J. Schieffelin, of New York.

The following conclusions were reached: That an effort should be made to raise a memorial fund of \$25,000 or more, the income to be given to the widow and daughter of Dr. Reed, and after their decease the principal to be appropriated either to the promotion of researches in Dr. Reed's special field or to the erection of a memorial in his honor at Washington.

Arrangements were made for the publication of circulars explaining this movement, and asking co-operation not only from the medical profession, but from all liberally disposed individuals who appreciate the value of Dr. Reed's services to mankind.

THE PENNSYLVANIA STATE BOARD OF HEALTH AND VIN MARIANI.

ON April 22d, last, the Governor of Pennsylvania approved an excellent law passed by the Legislature entitled "An Act regulating the sale or prescription of cocaine, or of any patent or proprietary remedy containing cocaine, and prescribing penalties for the violation thereof." A question arose as to whether the well-known "Vin Mariani," as a coca preparation, contained cocaine. The State Board of Health, on being appealed to, submitted the question to the analytical chemists, Professor Sadtler and Dr. Genth, the samples examined being purchased by them in drugstores of their own selection. The analysis showed that "Vin Mariani" contained no cocaine.

The Secretary of the State Board has therefore issued the following decision:

- “1. The Pennsylvania statute in question applies to preparations or proprietary or patent medicines which contain cocaine introduced therein as a medicinal ingredient, and undoubtedly prohibits the unrestricted sale of such preparations.
2. ‘Vin Mariani’ is not a cocaine preparation, but a wine possessing the aromatic flavor of coca, being made according to the formula of a French Bordeaux wine and containing the desirable qualities of two ounces of fresh coca-leaves to the bottle.
3. The new law in no way covers or applies to ‘Vin Mariani,’ the sale of which within the State can continue as before.”

This coincides with the physiological effects of coca recorded, which are those of a tonic resembling somewhat nux vomica and strychnine, though practically devoid of toxic properties, and showing also a predilection for muscular tissues. In fact, the leaves are chewed in quantities by the mountaineers of Peru, owing to the peculiar invigorating influence upon muscular activity.

Books and Monographs Received.

The editor begs to acknowledge, with thanks, the receipt of the following books and monographs:—

Mercurial Injections in Syphilis. By William F. Bernhart, Hot Springs, Ark. 1903.—A Histological Study of the Crystalline Lenses of a Hanged Criminal. By Charles A. Oliver, Philadelphia. 1902.—A Modification of the Abney Pellet Test for the Ready Detection of Central Scotomata. By Charles A. Oliver, Philadelphia. 1902.—The Mydriatic Drugs and their Active Principles. The Ophthalmological Relations. By Charles A. Oliver, Philadelphia. 1903.—A Brief Account of the Pennsylvania Infirmary for Diseases of the Eye and Ear, Established in the City of Philadelphia in the Year 1822. By Charles A. Oliver, Philadelphia. 1903.—The Relationship between Diseases of the Nose and Throat and General Diseases. By Jacob E. Schadle, St. Paul, Minn. 1903.—The Technique of the Radical Operation for Chronic Suppurative Otitis Media. By Edward Bradford Dench, New York. 1903.—Observations on the Diagnosis of Nasal Sinusitis. By Walter J. Freeman, Philadelphia. 1903.—A Pharmacological Study of an Aseptic Preparation of Ergot Devised for Hypodermic and Internal Administration. By E. M. Houghton, Detroit, Mich. 1903.—On the Desirability of Operating for and the Mortality from Chronic Pancreatitis. By W. Hale White, London, Eng. 1903.—The Intravenous Injection of Formaldehyde as a Cure for Septicemia and its Use in Small-pox. By Nelson D. Brayton, Indianapolis, Ind. 1903.—Pathology and Treatment of Small-pox: An Analysis of over Two Thousand Cases and of Fifty Autopsies. By Nelson D. Brayton, Indianapolis, Ind. 1903.—Disturbances of the Vasomotor Mechanism as a Factor in Diagnosis and Therapeutics. By John P. Arnold, Philadelphia. 1903.—Diagnostic and Prognostic Data in Nervous and Mental Diseases. By W. B. Pritchard, New York. 1903.—Hypnotism and Hysteria. By W. B. Pritchard, New York. 1903.—Nervous Diseases and Psychoses following Grippe. By W. B. Pritchard, New York. 1901.—Report of a Case of Tumor of the Brain Symptomatically Relieved by Exploratory Operation upon the Skull. By W. B. Pritchard and John A. Wyeth, New York. 1899.—Inefficiency of Ferrous Sulphate as an Antiseptic and Germicide. By Allan J. McLaughlin, Public Health and Marine-Hospital Service of the United States, Washington, D. C. 1903.—Foreign Trade of the United States in Forest Products, 1902. By Frank H. Hitchcock, United States Department of Agriculture, Washington, D. C. 1903.

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Sajous's Analytical Cyclopædia of Practical Medicine.

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THE PATHOGENESIS OF ADDISON'S DISEASE.

SPILLMAN AND HOCHÉ, in the *Archives Générales de Médecine*, of September 22, 1903, report a case of Addison's disease in which a fatal termination from what appeared to be an intercurrent affection occurred soon after the onset of the usual symptoms. The marked asthenia, bronzing, emaciation, etc., which preceded the terminal manifestations only occupied a couple of weeks, the patient then lapsing

into a cachectic stage characterized by fever, diarrhœa, and abdominal pain, which ended in death. At the autopsy the cause of the cachectic phenomena was readily found, namely: a circumscribed peritonitis of tubal origin, both tubes showing marked tuberculous lesions. The interesting feature of the case, however, was the condition of the adrenals and the neighboring ganglia. While the kidneys were normal, the adrenals were completely transformed. Instead of showing under section the cortical and medullary layers, with their well-marked distinctive color, each adrenal was greatly enlarged—twice its normal size—and was uniformly white and firm, the mass being distinctly tuberculous. The nervous elements also showed marked involvement, and here lies the feature upon which stress may be laid: *e.g.*, the condition of the semilunar ganglia. These also were twice their normal size, the left being somewhat larger than its mate. Examined histologically, fragments of these ganglia showed, not tuberculous lesions as was the case in the adrenals, but advanced sclerosis. Neither did the lungs show the least evidence of tuberculosis.

The authors assert that the identity of Addison's disease—*e.g.*, as to whether it is of glandular or nervous origin—does not pre-occupy investigators as much as formerly, the aim now being to establish as an autonomous entity the Addison syndrome pure and simple. In certain cases they state *the adrenals are alone diseased*, more or less destroyed, the nervous ramifications and ganglia appearing intact. Here the syndrome is incomplete, the bronzing, the digestive phenomena, the lumbar pains are absent, but the characteristic asthenia is present. The adrenal lesion becomes in such cases a mere *postmortem* find: death occurs suddenly as a result of a traumatism, a fall, or infection. This is the *fruste* form of Dieulafoy. The *asthenia* is due to *adrenal insufficiency* say the authors.

In other instances the *adrenals are intact*: a condition characterized by epigastric and lumbar pains, vomiting, palpitations, syncope, vertigo, with progressive asthenia and bronzing. Curiously enough, observe the authors, "all these symptoms appear simultaneously, and at the autopsy nervous lesions are alone witnessed." Addison is stated to have published in 1856 the first case in which the adrenals appeared normal, the semilunar ganglia being alone diseased. Jürgens is also referred to as having sometimes found the capsules normal, "gray degeneration" of the splanchnic nerves being present. In other cases referred to reported by Semmola, Raymond, Brault, Perruchet, and Haushalter, the integrity of the adrenals appeared absolute, while the semilunar ganglia showed the main lesions.

"These two lines of facts, all of which are naturally opposed to one another," conclude the authors, "would seem to include together the complete and complex Addisonian syndrome, the anatomical lesion of which is the capsular lesion *plus* that of the neighboring sympathetic nerves. Experimentation has thrown some

light upon the question, but, if it has demonstrated the rôle of gradually developed or acute adrenal insufficiency, it has not given us so far any satisfactory results as to the precise rôle of the abdominal nervous system."

And yet nearly one-half century has elapsed since Addison first formulated the syndrome which now so justly bears his name!

May I suggest that the forms referred to appear as normal sequences when the paths from the sympathetic chains to the adrenals *via* the splanchnic nerves and the semilunar ganglia are viewed in the light of conductors for impulses intended to augment the proportion of adrenoxin: *e.g.*, of oxygen in the blood? A lesion of the semilunar ganglia must normally arrest all impulses transmitted by way of these nervous structures,—and promptly, too, owing to their diminutive size and the compression to which their delicate end-brushes and dendrites are submitted as soon as any infiltration occurs. Is it "curious" under these circumstances that all the symptoms of Addison's disease, those of adrenal insufficiency, should appear simultaneously? And what can we expect to witness symptomatically when the adrenals are gradually undermined—and their secretion-producing area is being gradually narrowed? An equally gradual reduction of adrenal secretion means less adrenoxin—less oxygen—in the blood: what is asthenia but impaired cellular metabolism: *e.g.*, reduced tissue-oxidation?

C. E. DE M. SAJOUS.

Cyclopædia of Current literature.

ABORTION, VAGINAL INCISION IN SEPSIS FOLLOWING.

Of all married women who die between the ages of 20 and 30, nearly 10 per cent. succumb to a puerperal infection. At the present day, in private practice, at least, the mortality from childbed fever is nearly as high as it was forty years ago. Such a confession is astounding and humiliating, and we must of necessity come to the conclusion that the advantage of aseptic and antiseptic procedures are either chimerical or that the belief in them is still, to a large extent, more theoretical than practical. So far as the author's own experience goes, the remote results of a septic process following labor or an

abortion implicate more particularly the Fallopian tubes and ovaries in from 40 to 60 per cent. of the cases. As a rule, the infection begins in or near the external genitals. And, provided it is of a virulent nature, it implicates successively the structures of the vagina, the cervix, the uterus, and the Fallopian tubes, and thus extends to the peritoneal cavity. At other times it reaches the peritoneum through the uterine walls by way of the lymphatics or blood-vessels. Accompanying the inflammation there is often an exudate, which may accumulate in the peritoneal cavity or may remain sealed up in the Fallopian tubes. The exudate may be of any form or mixture of forms. If ab-

sorption of the exudate does not occur, organization takes place, with the formation of adhesions, which bind down the tubes and ovaries more or less firmly, and thus interfere with their functions. In this way various symptoms are produced which cause the patient a greater or less amount of inconvenience until the adhesions are separated. Under such circumstances we have two problems to solve: (1) how can we insure to the patient the best chance for her life? and (2) how can we, at the same time, prevent the occurrence of unfortunate sequelæ? The author advises the following method of dealing with an infection after an abortion: The cavity of the uterus is first cleaned out to prevent the continued absorption of toxins from any infectious material which may be present, and thus, at least, limit the intensity of the process. For this the finger alone is employed, or combined with the curette. The cavity of the uterus is washed out with hot saline and 2 ounces of peroxide of hydrogen; it is then cleansed with saline solution and sponged dry. After this 2 or 3 drachms of iodoform powder are placed in the uterine cavity, which is then packed with sterile gauze. Now the *cul-de-sac* is freely opened, and, after evacuating any fluid which may be present, it is irrigated with hot saline, followed by 2 ounces of peroxide of hydrogen. This in turn is washed out and the cavity wiped dry. Last, 2 or 3 drachms of sterilized iodoform powder are dusted into the *cul-de-sac*, after which it is packed tightly with strips of sterile gauze. By this procedure the author believes that two advantages are obtained: (1) by evacuating the fluid from the *cul-de-sac* further absorption is prevented; (2) the ovaries and Fallopian tubes are saved by preventing ad-

hesions which would almost invariably form as a result of the organization of the exudate. The author's experience has shown that the secretions from the uterine cavity are almost always sterile, while organisms are invariably found in the exudate in the *cul-de-sac*. Hunter Robb (Amer. Gynecology, June, 1903).

ACTINOMYCOSIS IN MAN.

The diagnosis of "primary pulmonary actinomycosis," even in the absence of all abdominal symptoms, must remain doubtful without a postmortem examination. In abdominal, as well as in pulmonary actinomycosis, the patient should be closely questioned regarding any previous more or less indistinct symptoms of appendicitis and sores at the anus. Faecal concretions found in the appendix in cases of actinomycosis should be microscopically examined. In actinomycosis following typhoidlike symptoms, a Widal test should be made. At the postmortem special attention must be paid to intestinal scars, which may easily avoid detection. Experiments and clinical observation indicate that the fungus cannot enter the human or animal body without a wounded surface. Must the wounded body also be the carrier of the infectious material, or can infection take place secondarily through a granulating accidental wound or the chronic ulcers described? Human actinomycosis of the skin and actinomycosis of the jaw in pasturing cattle offer suitable objects for investigation in regard to the latter point. Maass (Annals of Surgery, August, 1903).

ADAMS-STOKES DISEASE, A NEW SYMPTOM IN.

The writer reports a case of Adams-Stokes disease in which a new physical sign was observed in a patient in hos-

pital, appearing at various times during the day. It consisted in a perfect synchronism between the heart-beat and the respiration, there being an inspiration for each beat of the heart. In the interval between two heart-beats, and between two respiratory motions, there was no sign of activity on the part of the heart beyond the pulsation in the neck. Tracings of the respiration and of the heart-beat showed a perfect correspondence in both movements in the curves. The respiration curve showed no special features worth mentioning. The curve of the apex-beat, however, showed very plainly the small elevation indicating the contraction of the auricle, and also the two elevations corresponding to the closure of the aortic and pulmonary valves. The respiratory movements were in a fixed relation to the contractions of the ventricle, the inspiration slightly preceding the systole. These signs persisted for hours at a time, without any variation. The author ascribes the origin of this phenomenon to the dependence of the respiration-center upon the inhibitory center of the heart, in the sense that during the inspiration there is a diminution of the activity of the pneumogastric nerve upon the heart. In the case reported the bradycardia was due to an irritable condition of the vagus-center. During the inspiration the activity of the fibers of the vagus which inhibit the progress of the contraction of the heart-muscle, especially in this case that of the auricle, is increased; therefore the auricles pulsed with greater frequency than the ventricles. The auricular pulsation was about normal in frequency, but the respiratory center seemed to adapt itself, to a certain extent, to the demands of the heart, for the respiration was increased in frequency. It is

possible, however, that the slight dyspnoea, which was almost constant, was due to the increased venosity of the blood, caused by the rarity of the ventricular systoles. The author thinks that this phenomenon is frequently present in Adams-Stokes disease, and possibly might constitute a valuable sign for distinguishing the neurotic form of this affection from the muscular. Agenore Zeri (*New York Medical Journal* and *Philadelphia Medical Journal*; from *Riforma Medica*, July 1, 1903).

ADAMS-STOKES SYNDROME.

The Adams-Stokes symptom-complex is not a clinical entity. It may supervene in various diseases involving the heart, vagus nerves, or medulla oblongata. It is particularly likely to set in when the upper part of the ventricular septum is diseased. Arteriosclerosis is not essential for its production. Its occurrence in a well-studied case of localized lesion of the intramedullary portion of the accessorius nerve supports the hypothesis that the inhibitory fibers of the heart are derived from this nerve. A lesion of the ventricular septum is capable of producing bilateral degeneration of the extramedullary cardiac fibers of the vagus nerves. The existence of bradycardia in a case with bilateral vagus degeneration proves the muscular origin of bradycardia in such a case, as the inhibitory influence of the vagi then must be absent. The bradycardia is the fundamental feature of the Adams-Stokes syndrome. The nervous symptoms vary largely, according to the susceptibility of the nervous centers to the circulatory disturbance induced by the bradycardia. Peter Bassoe (*New York Medical Journal* and *Philadelphia Medical Journal*, September 5, 1903).

ADENOID VEGETATIONS IN INFANCY.

The author contends that some instances would appear to be truly congenital, symptoms referable to the condition being present at birth. He believes that a considerable number of infants suffer from a slight degree of adenoid vegetations, as evidenced by mild symptoms of nasal obstruction and catarrh.

But there are also not a few cases in which more severe and even grave symptoms may be present. These will materially interfere with the health of the infant and do not tend to improve with the ordinary medical treatment.

There are several forms of the affection: the first in which are found marked nasal obstruction and catarrh, with or without epistaxis; the second in which reflex phenomena are the principal manifestations of the trouble, without any real nasal obstruction (such signs may be convulsions, laryngeal stridor, and vomiting); the third those in which secondary septic affections predominate, these being chiefly septic adenitis and otitis media; and, last, those cases in which nasal obstruction is present and is associated with nervous and septic conditions. In by far the larger number of cases of adenoids in infancy the symptoms are slight and do not call for active operative treatment; but, on the other hand, there are certainly some cases, comparatively few in number, in which the signs and symptoms are such as to demand removal of the adenoid growth. In these the improvement that follows operation tends to confirm the fact that the various phenomena that the infant presents are, in reality, due to the lesion in the nasopharynx. R. C. Dun (*Lancet*, August 15, 1903).

ALBUMINURIA IN AORTIC INSUFFICIENCY.

A complicating parenchymatous nephritis may exist, as where the endocarditis is caused by diphtheria. The nephritis is generally amenable to treatment, while endocarditis persists. There may be a general atheroma which also involves the renal vessels leading to arteriosclerotic kidney. This is especially common with aortic insufficiency. When the energy of the heart sinks and the cardiac muscle undergoes fatty degeneration, stasis, followed by cyanotic induration, is found in all the organs. This occurs only in the later stages of aortic insufficiency. Besides this there is, however, another form of albuminuria, characteristic for the early stages of aortic insufficiency and not accompanied by cyanosis, oedema, etc. The urine is not diminished in amount, the specific gravity is relatively low, and the amount of albumin, hyaline and "granular casts very slight. Pathological examination of a few kidneys of this kind show that the marked variations in pressure are responsible for certain anatomical changes. The walls of the arteries and capillaries are found much thickened; so that the amount of blood carried to the kidneys must necessarily be less than normal. The liver and spleen show similar lesions, but never the lungs. V. Leube (*Münchener medizinische Wochenschrift*, July 28, 1903).

APPENDICITIS, ON THE OCCURRENCE AND SIGNIFICANCE OF CUTANEOUS HYPERALGESIA IN.

Cutaneous hyperalgesia is probably present at some time during all first attacks of appendicitis, except perhaps in the fulminating type, and depends upon tension within the appendix. It may be absent in attacks after the first,

if the first attack was of sufficient severity to destroy nerve-tissue in the wall of the appendix. When present in attacks subsequent to the first it often persists long after all other signs of the disease have gone, owing to the tension within the appendix being kept up by the presence of a stricture. It gradually disappears during convalescence as the other signs of the disease clear up. Disappearance of cutaneous hyperalgesia without improvement in the general condition of the patient is a sign of perforation or gangrene of the appendix and should be a signal for immediate operation. The presence of cutaneous hyperalgesia is no contra-indication to operation. Abscesses may form and general peritonitis may develop while it is present. Its absence, on the other hand, is of great importance. Absence of cutaneous hyperalgesia, the patient coming under observation early in the first attack of appendicitis, is a sign of gangrene of the appendix unless the case is obviously a mild one and the patient is rapidly getting well. Cutaneous hyperalgesia is, as a rule, absent in cases of abscess of the appendix. The age of the patient and the position of the appendix have no influence upon the cutaneous hyperalgesia. It is occasionally of use as an aid to the diagnosis of appendicitis. James Sherren (*Lancet*, September 19, 1903).

APPENDICITIS, THE FIRST CASE OF.

Dr. Howard A. Kelly, of Baltimore, has greatly delighted our French brethren by giving the credit of the first clear description of a case of appendicitis to a French surgeon. Speaking in French to the *Société de Chirurgie*, he said that in the *Journal de Médecine, de Chirurgie, et de Pharmacie*, Mestivier in 1759 reported the following case: A

man, aged 45, presented himself at the Saint-André Hospital, Bordeaux, for treatment of a tumor situated near the umbilical region on the right side. The surgeon made an incision, giving issue to about a pint of pus of bad quality. The patient died. At the necropsy the cæcum presented nothing extraordinary. The same could not be said as regards the vermicular appendix. There was found a large pin all crusted over and eroded. It may be inferred that this pin had been long imprisoned in the appendix, and had there set up the symptoms of the disease and caused death. A few years later, in 1776, a medical student named Joubert Lamotte published a report of a necropsy in a person who had died of tympanites. The author, after describing the symptoms of the illness, states that he had found in the vermiform appendix a foreign body as it were petrified, and in the cæcum entire cherries. The necropsy having been made in September, the cherry season was long past. The cherries had therefore remained in the cæcum, and the petrified body is the first example of faecal calculus. The first case in the nineteenth century was published by Jadelot in 1808. In 1812 a case was published in England, and in 1813 another in France by Wegeler. In 1824 appeared a paper by Louyer-Villermay, entitled "Observations to Serve for the History of Inflammations of the Cæcal Appendix." In this paper are related two typical cases, in each with a necropsy. It is unquestionable, therefore, says Dr. Kelly, that to Louyer-Villermay belongs the honor of having been the first to point out the importance of appendicular inflammation. Three years later, in 1827, Melier published a memoir on the subject, based on a case of his own, and a study of the two others

related by Loyer-Villermay, and on two new ones. He described the lesions in the appendix, and had even a notion of the possibility of surgical intervention. Melier had, unfortunately, no official position, and apparently little confidence in himself. His ideas did not find favor with Dupuytren, then the sovereign authority in French surgery; otherwise one of the most brilliant triumphs of modern surgery might have been achieved seventy years earlier than it was. This is one of the many examples of the disastrous influence of the superior person on the progress of science. (*British Medical Journal*, July 4, 1903.)

BIRTH PALSIES.

In a spontaneous labor one should not (in making traction upon the head) be in too great haste to deliver the trunk. The latter should be left to Nature, or should be helped by means of expression. Only in cases of necessity should traction upon the head be made, and even then the head should be flexed laterally only so much as is absolutely necessary to conform to the necessity in the case. If it is found necessary to hook the axilla, too great traction should not be made.

During the extraction by means of forceps expression should be used as an assisting factor, presupposing that the shoulders meet with an obstacle at the entrance of the pelvis. One should remember Walcher's hanging position, and bring the forceps not far outside of the direction of the axis of the body. By this, however, is not meant that the slight pendulum movements sanctioned in text-books should be omitted. Danger only arises when there is a deviation from thirty degrees; but a slight pendulum movement is not prohibited.

During extraction by means of the feet, the arms should be quickly attended to, in case they are interfering, by means of Mauriceau's procedure: *i.e.*, by placing the finger in the mouth of the child and using the arm to assist in the traction, resorting in grave cases to expression, and, if necessary, to Walcher's position.

If the extraction of the head offers considerable difficulties, this may be considered as an indication for the application of the forceps to the aftercoming head, in order to avoid stretching the nerves of the axilla.

The treatment of brachial palsies may be both surgical and medical. The resulting palsy is sometimes so serious that the expedient of exposing the brachial plexus should be fully considered. It is not impossible that in some of these cases nerve-strands are actually torn across. In such case, nerve-suturing would be indicated. Whether it could be carried out in practice is a problem for the surgeons.

The treatment of a brachial palsy, when once established, resolves itself into the employment of massage and electricity. How limited the results are is well known to all. In some cases, it is true, brachial palsies disappear more or less markedly, but this is not the rule when the condition is present in a typical degree. In this connection it should be added that the arm should not be allowed to hang helpless at the side, but should be supported in a sling or a Velpeau bandage. M. H. Bochrach (*New York Medical Journal and Philadelphia Medical Journal*, September 19, 1903).

CANCER RESEARCH.

For ten years von Leyden has been conducting researches on cancer, and

the authorities have now provided him with increased facilities for the work by erecting three "barracks" on the ground of the Charité Hospital, supplementary to the first medical clinic of which he has charge. One of the buildings is arranged for a laboratory and the others are wards with accommodations for twenty patients, but only such will be admitted as are past surgical aid. Von Leyden has long been a partisan of the parasitic nature of cancer, accepting the "cell inclusions" as the parasites. Richet and Héricourt, in 1895, were the first to announce that they had had encouraging results from treatment of cancer patients with the blood of dogs, asses, and horses previously injected with an aqueous extract of cancer-tissue. Jensen, in 1901, reported that he had succeeded in curing cancer in mice by injection of blood from rabbits previously injected with cancer extract. He also succeeded in cultivating cancer by reinoculation through eight generations of mice. Similar experiments had been undertaken by von Leyden and Blumenthal on dogs with positive results, and they had applied the same curative measures to man. Several goats were treated for months with injections of carcinoma from the uterus, liver, mamma, etc., each animal receiving only one variety of cancer. After months of this preliminary treatment, the blood of the uterus-carcinoma goat was used for the treatment of a case of uterine cancer, and of the mammary-cancer goat for treatment of mammary cancer, and so on. These experiences of Jensen and von Leyden led to results which were not conclusive, but encouraging. The experiments of the latter were the first systematic attempts to differentiate the various kinds of carcinoma and to apply in treatment the laws of cytotoxicity and

autolysis. Jensen also emphasized the necessity of differentiating the variety of tumor, although his researches were conducted with only one kind, adenocarcinoma, and only on mice. Von Leyden and Blumenthal have also been experimenting with crushed tumor-cells on the principle of the tuberculin treatment of tuberculosis, always carefully differentiating the variety of the tumor. They believe that the still unaffected parts of the organism elaborate specific substances in response to the stimulus of the tumor substance, which, on the one hand, check the growth of the carcinomatous degenerated pavement and columnar epithelium, and, on the other hand, produce substances which are able to dissolve the carcinoma-cells. Control experiments with intact pavement and columnar epithelium from noncancerous organs have not displayed any positive therapeutic influence to date. There is thus a marked difference between the results attained by injection with crushed tumor-cells and injection of the corresponding intact, noncarcinomatous crushed epithelial cells. A third line of cancer research has been conducted in the clinic, the purely chemical study of the metabolism of cancer subjects. The results up to last year were published by Blumenthal in the *Klinisches Jahrbuch*. All this research is being actively prosecuted now on a large scale. (*Journal of the American Medical Association*; from *Deutsche medicinische Wochenschrift*, vol. xxix, No. 24, 1903.)

CHOLELITHIASIS, BILE DRAINAGE IN.

If the gall-bladder contains bile, and the organ is distensible if the gall-bladder is removed, bile drainage is provided for by cutting the cystic duct across and leaving it open. If such a patient is very obese, or has degenerative lesions

of other organs, the writer prefers cholecystostomy. If there are symptoms of cholangitis, even of mild grade, bile drainage is provided for, and, if the condition is acute, the drainage must be free. If the gall-bladder contains cystic fluid, but no bile, and the patient has symptoms of cholangitis, the organ is removed, and the cystic duct cut below the obstruction to permit of bile discharge. In a few cases the writer has directly opened the common duct for the purpose of securing liver drainage; but it is very rare that this is necessary, unless there are or have been stones in the common duct and it is dilated. The cystic duct ordinarily can be advantageously used for the purpose, although in a few instances he has found it necessary to cut it off flush with the common duct, leaving a lateral defect in its wall for drainage purposes. This brought up the question as to how much danger of peritonitis there was as a result of bile leakage into the peritoneal cavity. If there is free gauze drainage, with or without tubage, there is but little danger of peritoneal infection from the bile. The writer has never seen a case of death from this cause; but the drainage should be attached to the proper point by a catgut suture to prevent its floating away by the bile discharge or displacement by the action of the diaphragm upon the liver. If the common duct is greatly dilated, and after removal of the calculi there is considerable *detritus*, the end of a rubber drainage tube is inserted into the duct opening and secured by a catgut suture. If this condition does not exist, tubage of the common duct is unnecessary.

To sum up: Cholecystectomy is to be preferred if the patient is otherwise in good condition. If the cystic duct is

obstructed and the gall-bladder contains only cystic fluid, ligation of the cystic duct, without provision for hepatic drainage, is safe. If there is any infection of the hepatic ducts, bile drainage is essential. W. J. Mayo (Transactions of the Chicago Surgical Society, Annals of Surgery, September, 1903).

CHOLELITHIASIS, MEDICAL TREATMENT OF.

Given a reasonable certainty of the presence of gall-stones in the gall-bladder or ducts, it calls for their removal by means of the surgeon's knife. Where, however, there exists some disease of other organs of the body, as the kidneys or the heart, which would render the use of an anæsthetic immediately dangerous to the health of the individual, it is questionable whether operation should be undertaken. If gall-stones are acute in their manifestations, the author advises to wait until the symptoms have diminished or subsided. If attended with jaundice, to wait a reasonable time to see if it does not diminish; and, if it does not, to attempt to improve coagulability of the blood by the use of calcium chloride. In recent years, by means of calcium chloride, the coagulability of the blood has been increased or improved to such an extent as to make a surgical operation much less dangerous than before it was given. The author would go farther than Kehr, if he understands him correctly, and say that if there are symptoms of gall-stones in the common duct, and they have subsided, and if following that, within a reasonable length of time, there are further symptoms or indications of gall-stones, he would urge operation. If understood from the paper read by Kehr at Washington that he would not operate on such cases.

While the speaker made this statement, from a medical point of view, of operating on gall-stone cases when the evidence was clear that they were present, surgeons should not forget that they owe a great deal of what they know today to Pasteur and Koch. It is the work of Pasteur, Koch, Lister, and others that has enabled surgeons to open the abdomen in these cases and to treat them successfully. The medical treatment of gall-stones was instituted long before surgeons thought of opening the abdomen for the relief of this condition. The Carlsbad treatment has been in vogue for years, and surgeons should not censure medical men too much for sending their patients to Carlsbad or resorting to medical treatment, when it is known that a celebrated surgeon who, two years after operating on his own father for gall-stone, was attacked himself, and, instead of undergoing an operation, went to Carlsbad for treatment. Frank Billings (Transactions of the Chicago Surgical Society, Annals of Surgery, September, 1903).

CHOREA.

Micro-organisms of the streptococcal group have been isolated from rheumatic fever. They have been isolated from the cerebro-spinal fluid and brain itself in chorea. They have been demonstrated in the pia mater and brain. Involuntary movements of a peculiar type have been recorded by Paine and the writer and F. Meyer as resulting from intravenous inoculation of rabbits with such micro-organisms. Identical bacteria are found in other rheumatic lesions in man, and are capable of producing the lesions of rheumatism in animals. Chronic leptomeningitis has been noted in chorea by Dana. The le-

sions found after death in acute chorea are such as one could explain on the view of an infection: *i.e.*, the minute thromboses and hæmorrhages, occasional embolism, degenerative changes in nerve-cells, and perivascular exudation commented on by Dr. Lees. These are scanty and imperfect facts, but very suggestive ones. It would be a valuable contribution to our knowledge to have a detailed examination of the brain, in a series of cases of chronic rheumatic chorea. This is a difficult matter, but the finding of multiple focal lesions, such as have been discovered in Huntingdon's chorea, would add further evidence. How much of chorea is due to the focal lesions, and how much to the poisons of rheumatism, is at present a matter of speculation, chorea being an infection of the nervous system comparable to the infection of the nervous system in tuberculous meningitis rather than that of the nervous system in diphtherial paralysis. Though in entire agreement with Dr. Lees as to the association of rheumatism and chorea, the writer would not go so far as some and say it is always rheumatic. Remarkable cases of chorea after erysipelas, during tuberculous meningitis, and after measles, which he has met, make him very cautious on this point. As regards rheumatic fever and chorea, he holds the view that one micro-organism is the cause. Poynton (British Medical Journal, August 29, 1903).

CLUB-FOOT IN CHILDREN.

The writer recommends the following method of applying the plaster and treatment in this condition: "First apply a piece of cotton felt to both the outer and inner borders of the foot, extending it over the malleoli. This is done as an extra precaution for the pro-

tection of the bony prominences, being needed especially over the metacarpophalangeal joint of the great toe and over the cuboid bone—this being usually very prominent. Then apply at least two thicknesses of a Canton flannel bandage to the foot and leg, extending it to the tuberosity of the tibia. Now, having the foot and leg well protected, the plaster is applied also up to the tuberosity of the tibia. This will prevent the leg from moving in the plaster cast and giving a better leverage when the twisting process is begun. Care should be had to have the toes held in their natural relation to each other; otherwise you will have an uneven pressure, and, as a result, swelling and pain. The plaster should extend well over the toes, but their ends should be exposed. While waiting for the plaster to set, grasp the leg with one hand, holding it firmly on the table, and with the other press on the plantar surface with a piece of board; this serves the purpose of overcoming some of the deformity and gives a flat surface on which the child can walk better. When ready to begin the redressement cut out a wedge-shaped piece of plaster on the outer border of the foot over the most prominent part of the deformity, for here the greatest pressure is needed; then connect the upper and lower angles of this cut by cutting a line through the plaster entirely around the foot. Of course, it is intended that these cuts should extend only through the plaster. Care should be taken not to allow this cut around the foot to be near enough to the heel to allow the front part of the foot to move in the dressing when the foot is twisted, for then you would defeat the object in view. The plaster cast is now in two pieces, each firmly fixed to the foot. By grasping the leg

with one hand and the end of the foot with the other, it takes but little force with this leverage to bring the opposite sides of the wedge-shaped incision into apposition, which corrects a certain amount of the deformity. While an assistant holds the parts in their new relation one to the other, they are fixed there by a wet plaster bandage applied around the foot and ankle in a figure of 8, care being taken to fill in well the gap made by the linear incision on the inner side of the foot. This third bandage, being applied over a dry plaster cast, can be easily peeled off at the next sitting; then make the wedge-shaped incision larger, and repeat the redressement as before. This can be repeated three or four times, when it will become necessary to apply an entirely new dressing. Great care should be taken lest you get compressed between the edges of the plaster, when forced together, a fold of loose skin, which would likely cause a bad ulcer. This was learned by experience, for in one of my cases I had a bad ulcer that necessitated suspending the treatment until it was cured." A. R. Shands (*American Journal of Obstetrics*, August, 1903).

DIPHTHERIA, THE USEFULNESS OF CONFIRMATORY CULTURES IN.

While in a certain small percentage of cases the diphtheria bacillus fails to appear in the first cultures, the failure is generally due to a conjoined infection with the septic micrococci. Apart from these instances, the fact that diphtheria is not present can be based on one negative culture up to the tenth day of the disease. The reasons for requesting a confirmatory culture in negative cases are: (1) where there is no growth whatever on the culture-media; (2) where

there is complete contamination and liquefaction of culture-media, in cases which are clinically diphtheria; (3) cases where there are suspicious bacilli; (4) in croup cases where the membrane is limited to the larynx and the duration of the disease is less than five days. Dryness of culture-media, scanty growth, and the recent use of antiseptics with satisfactory growth of other organisms than the diphtheria bacilli do not alone furnish sufficient grounds to demand a confirmatory culture. J. S. Billings, Jr. (*New York Medical Journal and Philadelphia Medical Journal*, September 12, 1903).

DISLOCATION OF THE HIP, CONGENITAL.

All cases should be checked by radiography, and no "cure" should be spoken of that is not a true anatomical cure. All cases of congenital dislocation under 14 years of age should be submitted to treatment. In the great majority improvement will result, while in some a true anatomical cure is brought about. In all these cases Lorenz's manipulations should be tried in the first instance. Even should they fail to effect reduction, they facilitate any subsequent procedures. The prospect of a cure by Lorenz's "bloodless method" is in direct proportion to the youth of the child, and after the age of 4 years there is little hope of a true cure by its means. In any case, the chances of a true cure by the "bloodless method" are not very great.

An open operation should be done whenever a radiograph shows that the bloodless method has failed to reduce the dislocation, except, perhaps, in the case of a very young child—under 3 years—in whom the manipulations may be repeated. With the open operation no fear need be entertained of shock,

bleeding, or sepsis. Under no circumstances should the joint surfaces be remodeled. An open operation is more calculated to result in a cure, as it enables the surgeon to ascertain beyond a doubt when the head of the bone is really in the acetabulum. The open operation is especially suited for cases over 4 years of age and for those of bilateral dislocation.

After the operation the limb should be put up in the position of maximum stability; in the majority of cases this will be similar to Lorenz's position. The limb should be put up in plaster of Paris immediately, and the casing should take in the flexed knee; this is essential in order to insure stability of the head of the bone. All tense structures should be stretched or tenotomized as a preliminary measure a week or so previous to the open operation. The after-treatment is practically identical with that of the Lorenz method. F. F. Burghard (*British Medical Journal*, August 29, 1903).

ECLAMPSIA. ACTION OF VERATRUM VIRIDE IN HEALTH AND IN.

The author's researches on dogs and other laboratory animals indicate that veratrum viride has a marked depressant action in physiological conditions. It rapidly reduced the temperature, and this reduction continued for hours, while about thirty hours were required before the drug was eliminated from the organism in case of rabbits and dogs. The facts observed indicate also that it acts mainly as a toxin on the muscles. On the whole, his experience would impel him to proclaim that veratrum viride should be banished from the treatment of puerperal eclampsia if it were not for the possibility that the organism in the stress of eclampsia may react

differently to the drug than might be expected from its physiological action on animals." (Chidichimo.)

Report of three cases of puerperal eclampsia treated with *veratrum viride*. The author made two subcutaneous injections of 1 cubic centimeter of the Italian fluid extract of *veratrum viride*, with a half-hour interval, after forceps extraction of a dead foetus. The same amount was given in a single dose to the second patient. The foetus was extracted later with forceps, as it was seen to be succumbing. The same amount was injected in the third case, but with a longer interval. Improvement was marked in all after the injections, as also in six other cases treated in the same way and previously reported. The women all recovered, but the foetus did not survive. In one case he gave it by the mouth. The total amounts ranged from 1 to 4 cubic centimeters, never more than 3 cubic centimeters in one dose. Saline infusion or enemata were the only other measures used. The pulse is the guide; as this becomes less rapid, under the influence of the *veratrum*, the convulsions subside. Pinzani (*New York Medical Journal* and *Philadelphia Medical Journal*; from *Bollettino d. Ostetricia e Ginecologia*, vol. ii, Nos. 1 and 3, 1903).

EHRlich's DIAZO-REACTION.

The writer has studied the behavior of the urine to Ehrlich's diazo-reaction in a great variety of diseases, and summarizes his findings as follows: In 28 cases of typhoid fever he obtained positive reactions both in the severe and in the mild forms. The reaction appeared on the sixth day of the disease, rarely later, and sometimes came on suddenly, sometimes gradually, at first giving a faint rose color and later becoming

more intense, to culminate with the acme of the disease, and gradually to disappear as convalescence sets in. The author did not see any relationship between the intensity of the reaction and the diuresis or the height of the fever, as has been asserted by Dolgoff. Neither was there any relation with the intensity of the infection. The greatest value of the reaction lies in prognosis, for, if it disappears or becomes less marked after the second week, a favorable result may be expected. Its persistence after the fever subsides means a relapse or a complication. If the patient gets fever during convalescence from another cause than a relapse, the diazo-reaction does not reappear. It is also a good diagnostic method aiding to distinguish between typhoid fever and conditions simulating it. Thus, it was negative in 5 cases of febrile gastric catarrh, in 4 of intestinal catarrh, in 6 of febricula, etc. According to the author, salol does not influence the appearance of the reaction. In cases in which a dose of 5 grams of salol is taken daily the reaction becomes less marked, but it reappears on the addition of an excess of reagent. In 37 patients with febrile diseases of various kinds the author found the reaction absent. In 220 cases of pulmonary tuberculosis he found that the diazo-reaction was absent in the early stages, that it was present often in the later stages, and that it was a bad prognostic sign. It did not depend in any way upon the intensity of the fever, the degree of emaciation, or the number of bacilli expectorated. The presence of the reaction in pneumonia is a bad prognostic sign, speaking for a severe infection and a probably fatal prognosis. The author obtained the reaction both in the mild and in the severe cases of erysip-

elas, while Costa and Stadelmann state that they have met with it only in the severe cases. In puerperal infection the reaction was positive during the entire attack, and was proportionate to the degree of the infection. In empyema it was present before and after the operation. In a case of acute endocarditis the reaction was positive and remained so till within four days before death. It was positive in splenic leukæmia, and also in uræmia, and in the last-named disease it continued to appear until the end. It increased in intensity as the condition of the patient grew worse. In cases of tumors it was almost always absent as long as there was no suppuration, but it appeared when there was any ulcerative process in the tumor. In anæsthesia with chloroform it did not appear. Carmelo di Bernardo (New York Medical Journal and Philadelphia Medical Journal; from *Riforma Medica*, June 17, 1903).

ELECTROTHERMIC HÆMOSTASIS.

Patients are more comfortable after operation, because the nerves so treated in the stumps are insensitive, which is not true in the ligated stump; as these pedicles are probably sterile, and become disintegrated and absorbed, they cannot give rise to adhesions of viscera, as we know that ligated stumps so often do. There is less blood lost, because this procedure is complete and wholly an antecedent or preventive one, which is not so true of hæmostasis by ligation, in which it is often better to avoid the formation of a large stump by a preceding ligation *en masse*, and to tie the individual spurting vessels after the severing incision has been made. And when this cut is made within the extent of the band of baked tissue, as can be done after the larger forceps have been

used, there is no show of blood on either side of the incision. This method of hæmostasis is certainly more nearly ideal, because it does not involve the introduction of a foreign body, and it is more nearly ideally aseptic than is the use of any kind of ligature material, which always implies the possibility of its not being aseptic, either from defective preparation or from manipulation with the only omnipresent instruments (the hands) which cannot be boiled. In vaginal hysterectomy it is superior in cancer cases, because it most nearly destroys the tissues which otherwise compose the stumps or pedicles, and thereby diminishes the chance for a recurrence. It is also of distinct advantage, because it does away with a most difficult and tiresome form of ligation, and also a very objectionable use of clamps, etc. It thus facilitates a very important part of the operation: *e.g.*, closure of the intestinal cavity and an avoidance of a very important chain of intestinal disorders, which so often follow the sojourn of a foreign body within the peritoneal cavity. By avoiding ligatures it avoids danger of secondary hæmorrhage, and also of infection from such ligatures when they become infected before they are absorbed or cast off. A. Goldspohn (*American Journal of Obstetrics*, August, 1903).

EPILEPSY, HEREDITARY FACTORS IN.

Although it was impossible to secure data in many cases, the writer thinks a definite history of the various neuroses of alcoholism was found in 46.5 per cent. of the total. Alcoholism, epilepsy, and insanity combined were responsible for 38.6 per cent. of the total cases, and paternal alcoholism existed in 18 per cent. of all cases. Diseases other than those connected with the nervous sys-

tem have little hereditary influence in epilepsy. The age of onset is influenced by the character of the heredity. A. B. Wright and C. F. Haviland (*American Journal of Insanity*, July, 1903).

EXOPHTHALMIC GOITER.

As surgical treatment is recognized as the most satisfactory in exophthalmic goiter, so is complete bilateral cervical sympatheticectomy to be considered the operation of choice. The operation should not be performed during the height of psychical irritation or tachycardia, nor by an operator who has not an absolute knowledge of the anatomy of the neck and a large experience in dealing with difficult operative procedures, or the means at hand to cope with any emergency. The results of the operation are far better than the other procedures, the mortality is much lower, and, in cured cases, the improvement is permanent. In chronic glaucoma, especially after the failure of iridectomy and sclerotomy, this operation may restore vision completely unless the disease is too far advanced, with absence of light-perception. In recurring attacks of epilepsy, sympatheticectomy should be resorted to. The results warrant the operation. Jonnesco has reported 12 cures and 4 improvements in 49 epileptics operated on before 1899. J. B. Deaver (*Annals of Surgery*, August, 1903).

[See THE MONTHLY CYCLOPEDIA for August, page 281, for an outline of the indications for this operation in exophthalmic goiter.—S.]

EXOPHTHALMIC GOITER, RESPIRATORY DISTURBANCES IN.

The writer distinguishes between the primary disturbances and those induced secondarily by mechanical compression

of the trachea by the struma — cardiac and bronchial asthma or hysteria. The primary are characterized by the shallowness of the respiratory curve, protracted inspiration and expiration, irregularity in the shape and size of the curves, with intervals of pauses in the respiration more or less complete. There is another form of the primary disturbances characterized by paroxysmal, rapid, deep breathing, likewise with pauses. He attributes both to the functional disturbance of the thyroid gland, which is responsible for the disease, and is inclined to indorse the possibility of combating this morbid secretion of the thyroid with the milk or serum of thyroidectomized animals. L. Hofbauer (*Journal of the American Medical Association*; from *Mitteilungen a. d. Grenzgebiete d. Med. u. Chir.*, vol. xi, No. 4, 1903).

FRACTURES, MODERN TREATMENT OF.

The writer concludes that our aim in fractures should be: first, restoration of function; second, maintenance of the symmetry of the member; and these should be accomplished by procedures that are as comfortable to the patient and as little annoying to the surgeon as is consistent with the object desired. H. S. McConnell (*New York Medical Journal and Philadelphia Medical Journal*, October 3, 1903).

GASTRIC ULCER.

The indications for surgical treatment of gastric ulcer are as follows: 1. Cases in which the indication is plain, as in hourglass stomach or pyloric stenosis, in which by no possibility dietetic or medicinal treatment could effect a cure. 2. Cases in which the physician has exhausted every other method of treatment. In most cases early opera-

tion is inadvisable. Before any operation the patient should be submitted to a period of prolonged rest in bed (not less than one month), with rigid dieting or rectal feeding. 3. Hæmatemesis sometimes calls for surgical aid, but the operative mortality is very high. A. B. Mitchell (*Lancet*, August, 29, 1903).

GASTRIC ULCER, SURGERY OF.

Pyloroplasty is a very simple procedure and should be very successful as an operation. A death-rate of 10 per cent. has been associated with it, but there is no reason why it should be so high. The immediate results of this procedure are often excellent, but there is a certain tendency for the orifice to recontract, the percentage of which we cannot at present estimate. Well-marked limitations, however, exist to the utility of this operation. In the first place, it can only be undertaken in the absence of adhesions. Secondly, it is very difficult, or almost impossible, to open out and to suture up a very thick and indurated pylorus. Thirdly, if the stomach is much dilated and sags downward, the contents are likely to stagnate in the pouch thus formed and no improvement will follow. Again, whenever the motor power of the stomach is diminished, pyloroplasty is of very little use. Finally, it must not be forgotten that occasionally duodenal ulcers coexist with the gastric variety and cicatrization of these may lead to duodenal stenosis when pyloroplasty would be useless.

Pylorectomy is sometimes valuable in the removal of chronic ulcers involving the pylorus when the latter has become hard and indurated. Formerly such a procedure was almost unjustifiable, owing to the death-rate, but at the present time, granting that there are no serious adhesions, there is no reason why it

should not be performed and with a high percentage of successes.

Gastroplication is sometimes useful as an adjuvant to one or other of these proceedings. It consists in folding up the stomach-wall and fixing it by a series of stitches so as to obliterate the pouch which always tends to form when pyloric obstruction exists.

Where, however, these procedures directed toward the pylorus itself are for one reason or another contra-indicated, gastro-enterostomy must be relied on, and the result will probably be most beneficial. A. Carless (*Lancet*, July 18, 1903).

GASTROPTOSIS, MEDICAL TREATMENT OF.

The writers read a paper embracing the work of three years in the Medical Dispensary of the University of Pennsylvania. Thirty cases have been observed for an average period of somewhat more than fourteen months, with particular reference to the following points: 1. In what proportion of cases presenting signs of gastric indigestion and in which gastroptosis has been demonstrated are the symptoms due to downward displacement of the stomach? 2. Does long-continued mechanical support permanently restore the stomach to its normal position? 3. What is the prognosis of the condition? The answer to the first question was that in about one-fifth of the cases no cause could be found for the anacidity and symptoms of gastric indigestion and fermentation, except gastroptosis. All these patients improved greatly, and were now practically free from symptoms. The treatment was regulation of the diet, mechanical support, with occasional doses of hydrochloric acid and lavage at intervals. In the other four-fifths of the cases symptoms of gastric

disorder could be distinctly traced to neurasthenia, gastric motor insufficiency and dilatation, chronic constipation, or passive congestion of the stomach. It was considered that gastropptosis in these cases was probably a link in the vicious circle.

The second question was answered in the negative. In all the cases examined after a year of constant mechanical support the stomach was in exactly the same position as when first examined.

In the third consideration, in those cases in which the gastric symptoms were caused by uncomplicated downward displacement of the stomach, the results had been very gratifying. The fight was to be a long one, but all the patients of this character were practically free from symptoms after one year. In the remaining four-fifths the prognosis depended upon the dominating factor in the patient's condition, and, of course, varied with each case. J. Dutton Steele and Albert P. Francine (*New York Medical Journal and Philadelphia Medical Journal*, October 3, 1903).

HÆMOGLOBINURIC FEVER.

The writer, after studying the data of 202 cases of this disorder, concludes that it always occurs in persons suffering repeated attacks of malaria (this was so in every case reported). It nearly always follows one or more mild paroxysms of malaria at the proper time for its next exacerbation (there was but one exception to this reported). It has all the characteristics of malaria, chill, fever, and sweat. Where an adequate examination of blood is made, the hæmatozoa of malaria are found (it was so in 41 per cent.). Its habitat, that of most violently malarious districts (all cases reported were in such districts), is sufficient to establish malaria as a

causative agent, if not the only one. Hæmoglobinuria is not due to the use of quinine. It should be given in large doses, and many patients are lost, owing to the insufficiency of the doses of quinine employed. The average dose should be about 40 grains of quinine a day, preferably administered by hypodermic intravenous injection. When the patients are seen late, methylene blue, in doses of from 3 to 6 grains, should be combined with the quinine. Walter Shropshire (*Journal of the American Medical Association*, September 5, 1903).

HÆMOLYTIC SERA, THE ACTION OF.

The writer gives the following summary of the chief results of an inquiry into this subject:—

1. Immune body and complement differ markedly from each other in their mode of combination and in the firmness of union.

2. Immune body can be in part separated before hæmolysis from red corpuscles containing multiple doses.

3. When red corpuscles containing multiple doses of immune body are hæmolized by the minimum dose of complement the surplus molecules of immune body remain attached to the receptors of the red corpuscles and can be in part separated.

4. Complement after its union either directly with cells or indirectly through the medium of an immune body cannot be separated again.

5. Each dose of immune body taken up by red corpuscles in addition to the minimum hæmolytic dose leads to the taking up of an additional and corresponding amount of complement. In this way many times the amount of complement necessary for hæmolysis may be used up.

6. When red corpuscles containing multiple doses of immune body are fully saturated with complement, immune body can still be separated. The immune body thus obtained comes off alone and not in the combination I. B. + C. Robert Muir (*Lancet*, August 15, 1903).

HERNIA.

The writer emphasizes various operative features, such as excision of the veins, utilization of the right rectus muscle to close the lower part of the right inguinal canal, and utilization of part of the cremaster muscle, which was formerly cut away, and outlines the steps of the operation resorted to by him. They are as follows: 1. Division of the aponeurosis of the external oblique and reflection of the flaps. 2. Splitting of the cremaster muscle and fascia a little above the center of the cord. 3. Freeing the internal oblique muscle as much as possible. Here it may be advisable to make relaxation cuts in the anterior sheath of the rectus muscle under the aponeurosis of the external oblique, but doing this after sewing of the internal oblique to Poupart's ligament is begun, when the tension can be better gauged. 4. When the veins are large, as is usual, they should be excised with very great care to avoid even the slightest extravasation of blood, avoiding any handling of the vas deferens if possible. 5. Ligation of the sac by transfixion of purse-string suture at the highest possible point. 6. Use of the lower flap of the cremaster muscle and its fascia by drawing it up under the mobilized internal oblique, holding it in position by fine silk stitches, which, having engaged firmly a few bundles of the cremaster, perforate the internal oblique, preferably where it becomes apo-

neurotic, and are tied on the external surface of the latter. 7. Mobilization of the internal oblique, possibly further release by incising the anterior sheath of the rectus muscle. 8. Overlapping of the aponeurosis of the external oblique muscle by the so-called Andrew method. 9. Closure of the skin with a buried continuous silver suture and covering of the incision with five or six layers of silver foil. It is unnecessary to dress or examine the wound closed in this manner for two weeks, when the wire may be withdrawn. The patients are kept in bed from eighteen to twenty-one days. If during the dissection of the sac the cord is torn from its bed and subjected to traumatism and the testicle withdrawn from the scrotum, the veins should not be excised. In such cases the writer would advise the transplantation of the vein alone. In children the veins should not be excised, as the probability of atrophy is greater than in adults. W. S. Halsted (*Bulletin Johns Hopkins Hospital*, August, 1903).

HYDROCHLORIC ACID, TESTS FOR.

The writer suggests a convenient modification of tests for hydrochloric acid in gastric contents. It consists of combining three well-known methods in such a manner as to make it possible to estimate both free and combined hydrochloric acid in the smallest possible quantity of gastric contents and within a space of time calculated to make this practicable for clinical use. The three methods referred to are those of Töpfer for free hydrochloric acid, of Honigman and von Noorden for hydrochloric acid deficiency, and the more recent method of Cohnheim and Krieger for the determination of combined hydrochloric acid, which method has not received the

clinical attention which it deserves. The desirability of possessing some more rapid and fairly accurate method for the determination of the combined hydrochloric acid in the clinic must be evident to everyone whose attention has been given to this subject, for the most accurate methods which we possess—namely: those of incineration—require the experience and laboratory surroundings of the trained chemist for their proper operation, and even then their accuracy is a subject for discussion in some cases.

The modified procedure is as follows:—

1. Determine the hydrochloric acid deficiency with dimethylamidoazobenzol by adding 0.5 normal hydrochloric acid, and note the quantity employed.
2. Determine the total acidity of this mixture with phenolphthalein and 0.5 normal sodium hydrate. This total acidity minus the quantity of hydrochloric acid added would give the original total acidity of the 5 cubic centimeters of gastric contents employed.
3. Add 0.5 normal hydrochloric acid in excess. Sufficient should be added to make the new total acidity at least 40 degrees higher than the original total.
4. Having noted the total number of cubic centimeters in the mixture, add sufficient calcium phosphotungstate solution to make 30 cubic centimeters and proceed as in the original method. The difference between the total acidity obtained by hydrochloric acid in excess and the final total acidity will represent the quantity of hydrochloric acid combined with all the albumin in the 5 cubic centimeters of gastric contents calculated in degrees. This combined hydrochloric acid minus the hydrochloric acid deficiency will represent the quantity of hydrochloric acid originally com-

bined with proteid in the specimen examined.

EXAMPLE.

Employed subacid gastric contents	5 c.c.	
HCl deficiency (dimethylamidoazobenzol)	1	“ 20
Total acidity (phenolphthalein)...	3	“ 60
Original total acidity.....(60-20)		“ 40
Added HCl in excess.....	3	“ 60
Added calcium phosphotungstate..	18	“
Total acidity (rosolic acid) of....	30	“ 30
Total possible combined HCl..(60-30)		“ 30
Actual combined HCl in gastric contents	(30-20)	“ 10

In order to secure good results it is necessary that all measurements should be made with great accuracy and that all vessels and pipettes should be perfectly dry. The animal charcoal should be chemically pure and should be tested before using. It is especially important not to carry the titration with dimethylamidoazobenzol beyond the deep-orange tint, whereas those with phenolphthalein and rosolic acid should be carried to the full limit. Operating in this way the error can be reduced to 4 degrees, usually as excess of combined hydrochloric acid and the necessary allowance can be made. As 4 degrees represents a quantity of hydrochloric acid equal to 0.146 per 1000, it is evident that the method is sufficiently exact for most purposes, and requires but little more time than the determination of the free hydrochloric acid and total acidity as usually practiced in offices and clinics. C. S. Fischer (American Journal of the Medical Sciences, October, 1903).

HYPNOTIC, A NEW AND VALUABLE.

The manufacture of new soporific medicines has not always been justified by the results, but some unusual virtues may be discerned in a recent synthetic production, veronal. This preparation, first described by E. Fischer and J. von

Mering, is one of a series of compounds of urea; its chemical name is diethyl-malonylurea, a designation which reveals a relationship to other hypnotics. In many of its properties it resembles trional, and all the evidence shows that it effects its work without changing the character of the blood or causing any disturbance of the respiratory function. In addition, it seems to have a considerable range of action, being useful in ordinary sleeplessness and meeting with a tolerable degree of certainty the more violent resistance of hysterical psychoses and acute mania.

These merits, considering the disappointing results we have had with new hypnotics, make veronal an object worth study and careful observation. Not being a proprietary or costly article, it has not the objections to its use that some other remedies of the same kind have, which, it is just to say, would find their good qualities acknowledged if it were not for their prohibitive price and commercial significance.

Veronal, we observe, has been used alone,—uncombined with any other hypnotic,—but it is far more effective in combination. W. Fischer and Poly, in their published reports of its clinical effects, have administered it in doses of from $\frac{1}{2}$ to 1 gram without the aid of association of another drug of similar nature. That, singly, it should have done such good service in so many varied cases is sufficiently expressive of its claims to consideration. It should be remembered, however, that veronal, like many other products of modern chemistry, is a highly complex substance with numerous chemical ramifications. On these grounds, as well as on physiological and on that of a similarity of physical properties, we consider it as perhaps the best illustration

of a valuable principle—nowhere more effective than in the class of soporifics—of combining two of these agents with powers supplementary of each other.

We venture to say that this principle—long known—has been too negligently observed by physicians. As an example, in the sphere of modern hypnotics we do not know of a more certain and effective combination than that of trional and sulphonal, in the proportion of 1 to 2, precisely because these two reinforce each other. In the whole range of therapeutics there is probably no more powerful and trustworthy aid in an extremity than the old combination of bromide, chloral, and opium (Brunton), but unfortunately there are grave objections to its general use. In the case, however, of such a union as veronal and trional these obvious objections do not present themselves, and, we think, these two drugs will appeal to the minds of our readers as logical allies, capable of producing better results together than either used alone. In fact, from the experience at hand, we entertain little doubt of the utility of combining veronal and trional in the proportion of 2 to 1. Both have a cumulative action, which shows itself in a gentle and continuous somnolence, without any toxic appearance; the remedial effects of their drowsiness are, in many cases, inestimable. We advise the taking advantage of this property by beginning with a full dose, 10 grains of veronal to 5 of trional, and continuing with smaller doses when the cumulative action appears. It would be rash to say that this forms an ideal hypnotic, but we believe, without hesitation, that it brings us a step nearer the goal of that desirable fruition. Roberts Bartholow (New York Medical Journal and

Philadelphia Medical Journal, September 19, 1903).

INFANT MORTALITY, REDUCTION OF, IN CITY OF NEW YORK.

The infant mortality of all countries is shockingly high, and this is shown to be unnecessary by the fact that infants that are well cared for show a very low mortality. The influences that contribute to the high mortality are defective feeding, the active cause, and heat and humidity and bad surroundings as contributory causes. There has been a marked decline in infant mortality during the last ten years in the United States and especially in New York City, due, for the most part, to the decline in mortality from summer diarrhoea. This striking decline in infant mortality is due to many agencies. The general adoption of pasteurization and sterilization of milk for infant-feeding is by far the most important of these, and applies to New York City and the whole of the United States. Other agencies in New York City are the improved city administration; the milk inspection of the Department of Health; the Straus Milk Charity; the fresh-air work of St. John's Guild and similar charities; cleaner streets and asphalt pavements; the new small parks, playgrounds, the recreation piers; the improved tenements, and the use of diphtheria antitoxin. R. G. Freeman (Medical News, September 5, 1903).

INTESTINE, CANCER OF THE.

In cases of chronic obstruction there is room for wide difference of opinion as to the advisability of operating. If operation is postponed until obstruction has become complete or nearly so, operation will only serve to discredit surgery. In cases where operation has

been delayed until a palpable tumor can be demonstrated it is probably unjustifiable to resort to even an exploratory operation. There probably is a time, in every case of cancer of the intestine, when the growth is local and can be removed with reasonable probability of a very long period of immunity. It is therefore important that the early symptoms of intestinal cancer should be more carefully studied and better understood. Exploratory incision should be restricted to those cases in which the earliest symptoms are those of acute intestinal obstruction, acute or chronic appendicitis, or of chronic intestinal disturbance in cases in which the presence of malignant disease is strongly suspected. Exploratory incision should be followed by radical operation only in those cases in which the disease, so far as gross examination will enable one to judge, can be wholly isolated and removed. Palliative operations are rarely justified. Homer Gage (Boston Medical and Surgical Journal, September 10, 1903).

LABIA URETHRÆ AND SKENE'S GLANDS.

The writer states that he often finds definite labia overlapping the urethral orifice. The function of Skene's glands is protective and in part sexual, and attention must be more regularly directed to them, since they are veritable glands (Schüller), their function being to lubricate the labia urethræ, and also sexual. Howard A. Kelly (American Medicine, September 19, 1903).

MARASMUS, THE THYROID GLAND AND.

Atrophy of the thymus gland is always found in cases of infantile atrophy. The condition of the thymus is an index of the general nutrition of the infant. The state of the nutrition in

infants may be estimated by a microscopical examination of the thymus at necropsy. John Ruhrah (British Medical Journal, August 29, 1903).

MCGRAW'S ELASTIC LIGATURE.

The writer aims to avoid the linear aperture which this ligature leaves and which may be broken up by adhesions. He advises a square stitch, for the making of which he gives the following directions:—

“Decide on the size of the square desired, and, after approximating the surface, gut and gut or stomach and gut, so that there may be no unnecessary tension, place a Lembert stitch of silk to join the two viscera at each of two points destined to be the diagonally opposite angles of the completed square. These stitches will hold the parts together and will serve as guides for the introduction of the ligature. The needle is introduced into one of the apposed viscera at a point selected for one of the remaining angles and brought out beside one of the guides. From here it is passed through the opposite organ, care being taken that the needle thoroughly pierces the mucous membrane,—which is somewhat resistant in a dog, but not so in a pig,—and out again at a point diagonally opposite the starting-place. From this point to the point of beginning the steps are directly reversed, viz.: the needle re-enters the first viscus, emerges at the first guide, re-enters the second viscus, and emerges as nearly opposite the starting-point as possible. The stitch is then just half done; two sides of the square are completed, and the arrangement of the elastic ligature may be correctly represented by a figure 8 bent in the middle. The remaining two sides of the square are completed in the same

manner, care being taken to make the distal loops of the two figures of 8 interlock.” After experiments in animals he concludes that the McGraw elastic ligature can be so inserted as to “punch out” as large an area of the juxtaposing walls as may be desired, with at least as much certainty and with greater safety than the Murphy button. The margins of such openings are smooth and not unduly cicatrized. The elastic ligature may remain *in situ* after punching the openings, although this is less likely to happen if tied with iodized catgut; such retention in the mucosa of so soft a material is not apt to be harmful or permanent. The time required is not sufficiently increased to render the use of this technique impracticable. Perhaps enough has been suggested to stimulate further research by others; so that the actual facts in these most interesting problems may shortly be brought to light. J. W. Draper Maury (Medical News, September 12, 1903).

METHYL ALCOHOL, THE TOXICITY OF.

Methyl alcohol is an active and dangerous poison. It is capable of producing and has produced in numerous cases death and permanent blindness even when taken in small quantities (Burnett, 5.6 cubic centimeters; Raub, 7.5 to 18.5 cubic centimeters). It is used extensively in substitution for grain alcohol and in the manufacture of extracts, spirits, and medicines intended for internal use, and its use is not suspected by the consumer. The author concludes that the present unsatisfactory condition of affairs could be remedied by requiring every manufacturer to publish on every package the formula of the preparation, as is done in England; by prosecuting everyone failing to do so; by recommending Federal tax

on methyl alcohol so that its substitution for ethyl alcohol will not be profitable. R. H. Main (American Medicine, September 5, 1903).

MINERS' PHTHISIS.

Miners' phthisis is not the result of gases given off by the strata or evolved by the explosives used in mines. It is a disease in which there is marked excess of fibrous tissue in the lungs, imbedded in which can be seen numerous particles of coal-dust and siliceous material, in which also cavities may be seen and tubercle occasionally detected. It is a disease of occupation, due to the irritating action of dust, which renders the individual liable to repeated catarrh; it is not only nontuberculous in the early stages, but may even remain nontuberculous throughout; when tubercle is present, it is an accidental infection, which, while hastening the end, does not exercise any very marked influence upon the pre-existing structural alterations caused by dust, unless it be a tendency toward disintegration. It is a local disease, purely personal to the individual, and never assumes hereditary characteristics. Accepting this view of the pathology of the disease, miners' phthisis, as experience in England has shown, may be largely prevented by improved ventilation, and by the adoption of means for the removal of dust or for the allaying of dust by water. T. Oliver (British Medical Journal, September 12, 1903).

NEUROGLIA TISSUE AND EPENDYMAL EPITHELIUM IN TERATOID TUMORS.

Neuroglia is a common constituent of teratoid tumors. Its structure in them is very varied, simulating many known forms. Neuroglia is more intimately associated with mesoblastic tissues in teratoid tumors than elsewhere. In

such tumors occur isolated fibers and groups of fibers which stain like neuroglia, but whose nature cannot be determined by the staining reactions of Mallory, Huber, and Benda, since these methods may stain other fibers than neuroglia fibers. In many cells of these tumors occur small dots or groups of dots which have similar staining reactions to neuroglia fibers. The presence of these dots in cells, though not absolutely diagnostic, may be considered as evidence in favor of the ependymal origin of the cells in which they occur. H. A. Christian (Journal of the American Medical Association, September, 1903).

NOSE AND THROAT OPERATIONS.

The writer emphasizes the importance of preliminary treatment for nose and throat operations under local anæsthesia. This includes local treatment, to free the nose and naso-pharynx from mucus and relieve congestion; laxatives, diaphoretics, and diuretics, to stimulate elimination; tonics to tone up the nervous centers and restore general functional activity; atropine, to prevent reflex inhibition. These precautions will assure less shock, prevent complications, and hasten repair. N. G. Ward (New York Medical Journal and Philadelphia Medical Journal, September 12, 1903).

OSTEOPLASTY.

The indications for osteoplasty are as follows: 1. Primary osteoplasty can rarely be resorted to with advantage. In a few selected cases it may be of service. 2. Secondary osteoplasty has a very wide range of application. The author describes these operations: (a) Osteorection, the bloodless correction of deformity during the plastic stage of repair. (b) Osteoclasia, the refracture

of bone-shafts. (*c*) Osteotomy, the division of bone-shafts, alone or combined with osteorection. (*d*) Oste-ectomy, the excision of bone. H. A. Higley (Medical Record, September 19, 1903).

PARALYSIS, ACUTE BULBAR AND PONTINE.

The writer gives the following as the symptoms of pons lesions: (*a*) Headache, malaise, vomiting. (*b*) Sudden and profound coma. (*c*) Twitching of the face and limbs or both. (*d*) Miosis and convergent strabismus or conjugate deviation (away from the side of the lesion). (*e*) Slow irregular breathing. (*f*) Irregular pulse. (*g*) Dysphagia. (*h*) Paralysis of limbs or crossed paralysis and exaggerated reflexes. (*i*) Gradual rise of temperature, sometimes to high point. (*j*) Death inside of twenty-four hours.

Acute softening of the pons-medulla may be divided into three general groups: 1. The syndrome of medullary softening. 2. The syndrome of pons softening. 3. A general syndrome, including symptoms seen in lesions of both pons and medulla, or in lesions in which the focus, while lying in one part, extends into the other. This latter symptom-group is as follows: (1) hemiplegia; (2) pain-temperature; (3) anaesthesia on the same side as hemiplegia; (4) loss of deep (muscular) sensibility, with ataxia, often on opposite side to hemiplegia; (5) lateropulsion to side of lesion; (6) paralysis of various cranial nerves, especially seventh to twelfth, on the side opposite to the hemiplegia; (7) dysphagia and dysarthria; (8) paralysis of sympathetic on same side as lesion, with miosis and refraction of globe; (9) subjective sensations of vertigo, roaring in ears, pararthria, and pain; (10) disturbances in rhythm of pulse and res-

piration. C. L. Dana (Medical Record, September 5, 1903).

PROTEOLYTIC ENZYMES.

The destiny of nontoxic, though otherwise physiologically characteristic, products of bacterial life in the body is determined by the presence of specific neutralizing substances that can be demonstrated in the circulating blood. By the customary methods of artificial immunization the amount of such antidotal substances in the blood may be increased, but only to a slight degree. Through the use of sera from animals, immunized from the nontoxic bacterial products, poor though such sera are in specific immune body, it is possible to distinguish the proteolytic enzymes resulting from the growth of different bacterial species from one another, as well as from certain physiologically analogous enzymes of animal origin. The proteolytic enzymes elaborated by certain bacteria in the course of their growth are much more resistant to high temperatures than is generally supposed, some being capable of exhibiting their characteristic function after exposure in the moist state to a temperature of 100° C. for from fifteen to thirty minutes. The so-called hemolysins of bacterial origin are, at least in some cases, probably proteolytic enzymes. It is possible by experimental means to contribute material support to the doctrine of Welch concerning the origin of "bacteriogenic cytotoxins. A. C. Abbott and N. Gildersleeve (Journal of Medical Research, August, 1903).

PUERPERAL FEVER, ICHTHYOL IN.

The remarkable results which have followed the use of ichthyol in the writer's five cases, three of which were desperate ones, have led him to believe

that it is a valuable remedy in this dangerous disease. The objection may be made that the packing had as much to do with the patient's improved condition as the ichthyol, but in two of the cases reported no packing was used, and the drug was simply injected into the uterine cavity after free irrigation. The writer is aware that at least one case of severe depression following the application of ichthyol to the cavity of the uterus has been reported. But no such untoward symptoms appeared in any of the cases here mentioned. However, all these patients were being well stimulated with strychnine and ammonium carbonate at the time. Instead of any unpleasant symptoms arising exactly the opposite was observed; in fact, the drug acted like a specific. Not only were the pulse and temperature reduced, rigors ceased, and discharge lessened, but patients had a feeling of well-being following the use of ichthyol, which was a pleasant contrast to the appearance of mental and physical suffering which is often witnessed in these cases. J. D. MacPherson (Medical Record, September 12, 1903).

[Ichthyol is a powerful stimulant of the adrenal system.—S.]

PUERPERAL INFECTION.

The writer doubts if there has been any sure advance in recent years in the treatment of puerperal infection. Whatever improvement has come has been in the matter of prophylaxis. Otherwise, for twenty-five years, obstetrics has been at a standstill. This has not prevented surgical interference of the most varied kind, however, and undoubtedly harm rather than good has been done, as a rule. Those who have been readiest to interfere actively for

the treatment of the condition have been least careful to differentiate the various types of puerperal infection before beginning treatment. The putrefactive varieties of puerperal sepsis are rarely fatal unless the pathological processes in the uterus are needlessly interfered with, Nature's protective mechanism broken down, and the resistive vitality of the patient lowered by uncalled-for remedial measures.

Referring to the curette, he states that in 1886 he read a paper recommending the use of the curette for certain conditions of puerperal infection. Many editors commented upon it, and portions of it, at least, were printed in many parts of the country, evidently attracting a great deal of attention. Undoubtedly, it has been a source of much more harm than good. In the case of retained remnants of the placenta and secundines the curette is not nearly as useful as the finger. The use of the curette opens the lymphatics, brings about the diffusion of septic material, and makes the cure of the condition impossible. The hand will do all that is needed in these cases and without any of the risk of causing damage almost inevitably incident to the employment of the curette. A good general rule in the treatment of these infections is avoidance of local treatment. The less that is done locally, the better. The methods suggested by Drs. Barrows and Pryor, by which an effort is made to have an antiseptic follow the infected material into the tissues or neutralize it in the circulation is undoubtedly the principle of rational therapeutics that will eventually prevail in this matter. The results obtained by them are very encouraging. Yet it must not be forgotten that the severest and most hopeless-looking cases of puerperal sepsis

sometimes get better unexpectedly, without the employment of either of the methods suggested, and, in fact, without any treatment at all.

As to operative interference, whenever there is pus present in the pelvis it should be evacuated. This is the simple rule of all rational surgery. Beyond this, however, operative intervention is almost sure to do harm rather than good. The writer confesses to be guilty of having done hysterectomy twice in puerperal sepsis. To be of any avail this should be done very early. As a matter of fact, the time for doing hysterectomy when there is hope of its being successful is so early in a case that there is very little prospect of the operation ever being really undertaken in time. Surgery in puerperal fever has been entirely too radical and too ineffective. What is needed is some agent, such as Dr. Barrows and Dr. Pryor are making their observations with, that will, if possible, follow the streptococci in their invading course to the lungs, the brain, the heart, and the kidneys of the patient. Egbert H. Grandin (*Medical News*, September 26, 1903).

SEPSIS, POSTTYPHOID.

The fevers that not infrequently follow typhoid are not real typhoid unless they are true relapses. To constitute a true case of typhoid there must be the bacterial infection plus the intestinal lesions. After the intestinal lesions have run their course other things may happen, due to the typhoid or other bacilli, but these other things are not typhoid fever. True posttyphoid fevers are of three kinds: 1. The ordinary moderate rises of temperature, only lasting a few hours, occurring within

three weeks after the end of typhoid fever. The only important thing about such fevers is to understand that they are of no importance. 2. The posttyphoid fevers which last for one or two weeks, but yet do not make the patient very ill and are not fatal. 3. The severe posttyphoid fevers which may run a long course. They occur regularly after well-marked and severe typhoid fevers which run their full course in four weeks. The septic fever is continuous with the typhoid fever. Sometimes it overlaps it; so that both fevers seem to be going on together in the fourth or fifth week. Such fevers may prove fatal. Francis Delafield (*Medical Record*, September 12, 1903).

SMALL-POX, PATHOLOGY OF.

The writer studied five cases of small-pox at autopsy and concludes that the early skin lesions indicate that the primary infection in small-pox takes place in the lungs, probably by inhalation. The poison, when it enters the circulation, shows a selective influence on the epithelium of the skin and respiratory tract, and many cases are probably not further affected. The serious and fatal lesions of small-pox are caused by the secondary infection from the skin and respiratory tract, and the infectious agent is usually the streptococcus pyogenes. This organism is so distributed throughout the lesions as to explain most of the visceral changes, such as thrombosis, local necrosis, and the various pulmonary changes. This streptococcal septicæmia is the most striking feature of fatal small-pox, and, if it were possible to overcome this condition by a special serum, the mortality from the disease would be greatly reduced. W. R. Stokes (*Bulletin Johns Hopkins Hospital*, August, 1903).

SMALL-POX, THE EYE COMPLICATIONS OF.

In view of the growing sentiment against vaccination, almost any community is liable to experience an epidemic as disastrous as that through which Cleveland has just passed. The eye complications of small-pox are greatly to be feared. The dangerous corneal complication is a secondary infection, commencing about the twelfth day, but many come much later. The infection in the Cleveland epidemic was a streptococcic one, and different in no way from similar infection of the eyes of a patient already much exhausted from a serious disease. No specific prophylactic treatment has been found, and the best that can be done is to keep the face and eyes in as nearly an aseptic condition as possible by frequent washing and the use of such antiseptics as will prove the least harmful to the eye. A. R. Baker (Journal of the American Medical Association, September 12, 1903).

SOME MISTAKES WE HAVE INHERITED.

Our inherited beliefs regarding the following subjects are in error: (1) vomiting, (2) appetite, (3) the eating of stale bread, and (4) the expediency of eating sugars and fruit for their laxative effect. The writer considers that:

1. There is no such thing as reflex vomiting. Vomiting is always due to spasm either of the stomach or of the intestines, and this spasm is, in turn, always due to irritating material which acts directly upon the mucous lining. Green vomit is due to the presence of green mold, and not to bile. Bile may be present, but bile is yellow, and not green. Chocolate-brown colored vomit is most

often due to red mold. One must never assume the presence of blood; one should prove its presence if it is suspected. 2. Appetite is the sensation produced by a contracted stomach. When the stomach relaxes appetite vanishes. 3. Stale bread is not more easily digested than fresh bread. Clinical experience is misleading. It is the quantity that makes the difference. Fresh bread is more palatable than stale bread; hence more of it is eaten at a time. Bulk for bulk, there is no difference in the digestibility of stale and fresh bread. 4. Sugars and fruit certainly do move the bowels. It is because they ferment and decompose and so give rise to irritating products. In small quantities they may be good, in large quantities they are absolutely dangerous. M. I. Knapp (Medical Record, September 19, 1903).

SPINAL COCAINIZATION WITH THE ADDITION OF ADRENALIN.

The author describes experiments in cats. When both drugs were injected simultaneously, three times as much cocaine was necessary to kill the animals; if the adrenalin was injected six minutes before the cocaine, five times as much was required. The adrenalin itself in the usual dose is innocuous to both man and animals. The experiments were then repeated with surgical cases, and it was found that a much smaller dose of cocaine was necessary to bring about the desired anaesthesia. The most severe operations could be done after $\frac{1}{2}$ centimeter of adrenalin solution (1 to 1000) diluted with the same amount of water and followed by 0.0075 to 0.015 cocaine. A. Dönitz (Münchener medizinische Wochenschrift, August 25, 1903).

SPLENIC ANÆMIA.

The histological changes met with in the spleen in splenic anæmia are as follows: Atrophy of the Malpighian bodies, brought about either by an overgrowth of the connective tissue insheathing the central artery or by an encroachment of fibrous tissue from the periphery. Thickening of the capsule and the trabeculae, the walls of the vessels, and of the fine fibrous reticulum forming the walls of the spaces of the splenic pulp. Proliferation of the endothelium lining the splenic vessels and blood-spaces of the pulp. The proliferated endothelium appears in the form of large cells with clear protoplasm and a peripherally situated nucleus, the cells in some instances completely filling the blood-space. Occasionally giant cells are present. H. D. Rolleston (*British Medical Journal*, September 12, 1903).

STOMACH, SURGICAL INTERVENTION IN THE.

Surgical intervention is indicated: In all cases of gastric disease in which the trio of pyloric symptoms—pain, vomiting, and retention of gastric contents—are typical and persistent, even though the nosological diagnosis has not been definitely established; in every case in which a positive diagnosis of a neoplastic lesion has been made, especially if this is demonstrable by direct exploration, though the symptoms may be few or absent altogether, these sometimes appearing only in the late stages; as the sole means of making a definite diagnosis and determining the medical or surgical treatment in doubtful cases in which the patient is wasting to an alarming degree, though the gastric symptoms may be obscure. D. S. Cardenal (*New York Medical Journal* and *Philadelphia Medical Journal*; from

Revista de Ciencias Medicas de Barcelona, Year xxix, No. 5, 1903).

SYPHILIS, BACILLUS OF.

The writer describes a microbe which he found in *all* patients during the secondary manifestations of syphilis. It is agglutinated or clumped by the serum of individuals with secondary syphilis, but no reaction takes place with the serum of healthy subjects. It can be grown after having passed through a porcelain filter. The direct inoculation of animals with the blood of syphilitics during the secondary manifestations causes the production of a hard ulcer, involvement of the lymphatic glands, paraplegia, etc. Inoculations of the laboratory animals with cultures of this microbe occasion special lesions comparable to those observed in syphilitics. It combines with the special sensitizing body (sensibilitrice) generated in the organism of animals vaccinated with syphilitic products. Cultures of this bacillus are without effect when inoculated into syphilitics. Like syphilis in man, this microbe dies with the infected animal. Justin de Lisle (*American Medicine*, Sept. 19, 1903).

SYPHILIS, INTRAVENOUS INJECTIONS OF SUBLIMATE IN.

Report of a series of cases in which the writer used the method of Baccelli in the treatment of syphilis. This method has been employed in several hundred cases without observing any local or general disturbances due to the use of mercury in this form, except occasionally slight intestinal disturbances. It must be noted that not every patient presents a development of veins which is suitable for the application of this method, and also that, even in those persons who are suited for the injection

tions, the veins after a time become less well adapted to receive the needle, and so the little operation becomes difficult and the treatment has to be suspended. This is a serious disadvantage of Baccelli's method. The author concludes that the results obtained with Baccelli's method in the early stages of generalized syphilis do not entitle it to preference over other methods of using mercury. In fact, in slight cases with moist lesions which heal easily Baccelli's method is of no more value than any other. In the more severe forms, and especially in the squamous and nervous types, Baccelli's treatment does not present a decided value, and other modes of administering mercury, such as calomel, must be resorted to. Gravagna (*New York Medical Journal and Philadelphia Medical Journal*; from *Gazzetta degli Ospedale e delle Cliniche*, June 21, 1903).

TABES IN THE NEGRO.

Long residence with the white man has made the American negro anthropologically, physiologically, and pathologically different from his African ancestors. The constitutional variation has been wrought by acclimatization, social environment, and, more than all else, by miscegenation. The influence of miscegenation and the advent of personal liberty are responsible for a new era of diseases. The newer diseases in the negro, of which tabes is an example, are fast becoming more commonly recognized, miscegenation being regarded as the potent factor in reducing the negro's resistance toward disease. Tabes exists in the negro perhaps more commonly than has been supposed, and failure to recognize it may be due to the abeyance or total absence of the ataxic symptoms in the amaurotic type. The

Edinger-Marie observations anent the optic atrophy satisfactorily explain that class of cases in which the tabes is arrested by blindness. Aryan admixture is essential to the production of tabes in the negro. D'Orsay Hecht (*American Journal of the Medical Sciences*, October, 1903).

THYROIDITIS AS A SEQUEL TO TYPHOID FEVER.

The author reports the case of a young man in whom inflammation of the thyroid body followed a severe attack of typhoid fever. The organ had previously been enlarged. The purulent discharge obtained on incision of a fluctuating portion of the mass contained typhoid bacilli. The formation of the abscess occurred during convalescence and was unaccompanied by fever. A. Krause and C. Hartog (*Berliner klinische Wochenschrift*, August 17, 1903).

TUBERCULOSIS IN MAN AND IN ANIMALS.

The widely advertised pronouncement of Koch, while in England a few years ago, as to the difference between human and bovine tuberculosis excited scientific interest all over the world, and caused the foundation of a special Investigation Commission attached to the Berlin Sanitary Bureau. The commission was greatly assisted in its laudable work by the German authorities, and the results of its labors have been embodied in a report presented the other day by its chief, Professor Kossel, before the Berlin Medical Society.

The communication treated, first, of the results obtained by the subcutaneous injection of tuberculous virus, derived from pigs and cattle, into cattle. In order to avoid the possibility of mixed infection a pure bouillon culture

was employed instead of the matter directly from the infected animal. The site of the inoculation swelled perceptibly, attaining in the course of a few weeks the size of one's palm; on the eighth to tenth day the nearest lymphatic glands became involved, and in many instances attained the size of a child's head. Fever was observed the eighth day after injection. On autopsy the contents of these glands were found to consist of cheesy matter, while the rest of the body contained abundant miliary tubercles.

The experiments with human virus in the form of cultures made from sputum and pulmonary tissue gave the following results: Both swellings at the site of inoculation and the enlargement of the adjacent lymphatic glands were considerably smaller than in the former experiments. At the autopsy of animals four months after inoculation, living bacilli could be detected at the site of the injection, while the contents of the glands consisted of small, circumscribed foci of cheesy matter; no miliary tubercles were found anywhere on the body. Inoculations were also made with bacilli from tuberculous bones, tuberculous cervical glands, and from one case of tuberculosis of the genito-urinary tract.

The sum-total of the experiments with human tuberculosis embraced 39 different cultures: 23 from adults and 16 from children. Nineteen of these cultures failed altogether in producing any marked changes in the inoculated animals; 9 caused the appearance, in the course of four months, of small infectious foci in the nearest lymphatic glands, but without any further spread of the disease; in 7 other cases there was a somewhat more considerable affection of the lymphatics, and only 4 cases, in which the inoculation was

made from the virus of children, was there noted a general infection. The conclusion drawn was that, notwithstanding Koch's view of the small danger of transferring bovine tuberculosis to man, a few of the cases in which this danger became a reality should serve as a warning against the use of raw milk from infected animals as food for children.

In the very animated discussion that followed the report, Professor Orth, Virchow's successor at the Berlin University, called attention to the fact that extreme caution should be exercised in drawing conclusions from observations on the transmission of tuberculosis from animals to man. He referred to the statement of Schütz (Koch's co-worker in the Veterinary Institute), that the pearly distemper of cattle (bovine tuberculosis) may, though very rarely, be transmitted to man. The observation that those working over cadavers of cattle less frequently became affected with what is known as the cadaver tubercles of the hand than those who perform autopsies on human beings is, according to Orth, due to the fact that cattle in general suffer less from tuberculosis than man. Moreover, it remains yet to be proved that this affection is really of a tuberculous nature. It is quite likely that we have to do here with a form of mixed infection. The differences in the pathological anatomy of tuberculosis in man and that of the pearly distemper in cattle are accounted for by the differences in the anatomical structure, for it is a well-known fact that the same infectious principle presents a different pathological and clinical course in different living beings. It is sufficient to compare tuberculosis in man and in the guinea-pig.

Domesticated animals, such as goats

and pigs, are easily susceptible to human tuberculosis, as Schütz himself proved some twenty years ago. Orth inoculated five calves with human tuberculosis, and, of these, two fell victims to a severe form of general tuberculosis. The data communicated by the Sanitary Bureau go to show that 10 per cent. of all inoculations of cattle by human tuberculosis resulted in severe forms of the disease; 28 per cent. of the cultures of tubercle bacilli from man turned out to be pathogenic for cattle. Koch and his followers assert that tuberculosis which is transferred from man to cattle is not human tuberculosis, but the "pearl disease." If that be the case, then it is clear that man may become infected from cattle and *vice versa*, and all the measures adopted hitherto to prevent the spread of the infection from cattle to man must remain in their present force.

The discussion on the subject became so heated that, in replying to Professor Schütz, Dr. Orth was forced to confess his astonishment at the attitude of Koch's followers, who have tintured the question with a peculiarly personal element, as if defending the personality of Koch himself. The fame of the great bacteriologist, as Orth well remarked, is so firmly established that it would not suffer a whit even if he acknowledged that he had committed an error, for in scientific questions truth must stand above every other consideration: *Amicus Schütz, amicus Koch, sed magis amica veritas*. Editorial (Medical News, September 19, 1903).

TUBERCULOSIS, THE PSYCHICAL RELATIONS OF.

The consumptive exhibits, in the average case, traits of mind and of temperament that have been made use of

by some of the best writers of fiction in describing the characters of tuberculous persons—traits that are well worth studying, inasmuch as they are directly connected with the disease, although not specifically characteristic of tuberculosis. The psychical and temperamental traits of the average consumptive have not been studied by medical men with the attention which they deserve. The only probable theory thus far advanced as to the causes of the mental and moral degeneration of the consumptive, leading even to criminal tendencies, is that of toxic poisoning of the central nervous system by the products of the tubercle bacillus, resulting in neurasthenia, psychasthenia, hysteria, and insanity. The fundamental factors in the psychical make-up of the typical consumptive are the loss of self-control; the rise of brute selfishness; the increase of susceptibility to suggestion, to emotion, and to nervous irritation; and the tendency to rapid nervous and psychical fatigue. There is no tangible proof that the sexual functions are exalted in tuberculosis, but in all probability the sexual irritability is raised in the early stages of the disease and lowered coincidentally with the lowering of vitality in the later stages. In all probability, there is a connection between tuberculosis and insanity, the tuberculous toxin contributing, with other factors,—in persons rendered susceptible by psychical and somatic degeneration,—to the derangement of the mind. Any form of insanity may be found in tuberculous persons, and the term "tuberculous insanity" should not be used to designate a type of insanity peculiar to tuberculosis. The criminal tendencies of consumptives have been observed with sufficient frequency to justify an investigation into the medico-legal question of restricting the responsibility of

a criminal on the ground that he is tuberculous. Mental and physical degeneration, together with the tuberculous intoxication already referred to, are the chief factors in the make-up of the tuberculous criminal. The euthanasia of consumptives, which has excited speculation, is to be explained on purely physical grounds, the changes in the nervous system being so marked at the time of approaching dissolution as to efface the patient's suffering and render his death easy. G. A. de Santos Saxe (*New York Medical Journal and Philadelphia Medical Journal*, August 8, 1903).

TYPHOID FEVER.

The acid sulphate of soda is germicidal to typhoid bacilli in a solution of 1 to 300. It does not have a toxic effect when used hypodermically on guinea-pigs in a solution of 1 per cent. It increases leucocytosis, and in this way helps Nature to combat the disease. It neutralizes typhotoxin, and must, in a measure, lessen the delirium, fever, diarrhoea, and mental stupor, and modify various other symptoms attributed to this poison. It prevents, to a greater degree, the congestion of Peyer's patches and the other lymph-follicles of the intestines. By so doing it prevents, to some extent, hæmorrhage and perforation. It will resist the bacilli or toxin in any portion of the body. It will greatly lessen the complications of the disease. It is a prophylactic, as it can be taken by mouth in large quantities in an antiseptic strength, and as it will not be neutralized in the stomach, although the susceptible typhoid stomach is one of subacidity. This acid sulphate of soda will replace physiologically the deficient hydrochloric acid. It furnishes an abortive treatment, since if it les-

sens the intestinal involvement it would necessarily shorten the disease. It may be used to purify contaminated drinking-water by allowing the solution to stand from twelve to fifteen minutes before being taken. H. G. McCormick (*Therapeutic Gazette*, August 15, 1903).

It is probable that this disease is much more frequently met with in country than in city practice, and the question is asked as to the utility of what is known as the Brand method of treatment in country practice. Primarily in many country homes the bathing process is not practical, but in most cases ice is obtainable, and is an invaluable agent as an antipyretic. When not obtainable it is nearly always possible to get some alcohol or common whisky, which may be diluted to any extent and topically applied to the whole body as frequently as may be indicated by rise of temperature. Ice, when broken in small pieces, may be applied to the head with great advantage.

For internal medication ordinarily not much is required. Keep the patient as quiet mentally and physically as possible, and in a prone position, not rising even to answer the calls of Nature when it can be avoided. In case of bowel hæmorrhage, apply ice to and over the ileo-cæcal region and give from 20 to 30 drops of aromatic sulphuric acid every half-hour, lengthening the intervals; but, above all, rest and quiet are to be observed. Don't give milk, as when not digested it is likely to form a focal point for a propagation and spread of the bacillus that is the original cause of the disease; instead, give an abundance of boiled rice-water that has been cooled to taste, with meat-broths, changing from one to another from time to time. The patient should be kept supine and quiet in bed for at least ten days after

there has ceased to be a daily rise of temperature.

These points are in response to recent inquiries in regard to opinions of Brand and other methods used in treatment of typhoid fever. Editorial (Cincinnati Lancet-Clinic, September 19, 1903).

TYPHOID FEVER, RECOVERY FROM PERFORATIONS IN.

The writer reported a case of typhoid fever seen in a relapse. In the primary attack the patient had pleuropneumonia, on account of which he was extremely prostrated. The temperature was normal on the 29th and 30th of May. On the 31st it began to rise and continued rising gradually. By the 5th of June it was 104° F. in the evening. On the morning of the 4th, after a slight chill, it fell to 102° F. The pulse rose to 130 and there was slight abdominal tension. Frequent micturition was marked, pain occurring as soon as there was a small accumulation of urine in the bladder. The writer saw the patient with Dr. Mueller. The patient was in moderate collapse and the abdomen was distended. There was no rigidity. Pain was complained of at a point halfway between the pubis and the umbilicus. The absence of rigidity suggested appendicitis, especially as the bladder symptoms had not abated. The vermiform dipped into the pelvis. Rectal examination showed slight tenderness in the pelvis, but no undue fullness. Vomiting took place four or five times during the day. Notwithstanding the indefinite nature of the symptoms, it was believed that perforation had taken place. The patient was so desperately ill and had been so very ill from the previous pneumonia, resolution not having fully taken place as yet, that it was deemed unwise to interfere. On the

fifth day the temperature was 101° F. in the morning; 104° in the evening; pulse, rapid, thready, averaging about 118. There was no vomiting. There was slight pain on pressure, but no rigidity. On the 6th, 7th, and 8th the temperature remained between 103° and 104°; pulse, 120 to 130. On the 9th the temperature fell to 99°; pulse to 106; respiration to 18. No unusual symptoms prevailed except those of weakness. On the morning of the 10th the temperature was again 104.5° F. and continued at this point through the day. In the evening it had fallen to 101° F. Blood was found in the stools. Repeated discharge of blood throughout the remainder of the night and all the following day showed that a continued hæmorrhage was in progress. Death occurred on the 11th from exhaustion. At the autopsy a small ulcer in the ileum was found to have perforated the bowel and formed adhesions to the bladder. There was very decided localized peritonitis, but no extension to the general peritoneum. The perforation had undoubtedly taken place, after which adhesions had formed, preventing the occurrence of the general infection. John H. Musser (New York Medical Journal and Philadelphia Medical Journal, October 3, 1903).

UNCINARIASIS IN PORTO RICO.

The anæmia which the parasite produces is due to three factors: 1. To the direct abstraction of blood by the parasite. 2. To the digestive disturbances caused by the wounds produced in the intestinal mucosa. 3. To the hæmolytic toxin produced by the parasite. This latter cause is probably the most potent one.

Proper treatment will be followed by

cure or improvement in the vast majority of cases. The authors tabulate the histories of 100 cases and so show what they have accomplished. Treatment naturally falls under two heads: (1) the expulsion of the parasite, and (2) the regeneration of the blood.

1. Expulsion of the parasite. Thymol is the best and safest vermifuge for the expulsion of the worm. It should be administered as follows: At night from 1 to 2 ounces of magnesium sulphate should be given. If the effect is not sufficient, the salt must be repeated the following night and the thymol withheld. The next morning 30 grains of thymol are given and the dose is repeated in two hours. If by noon the bowels have not moved freely, another dose of salts must be given. Thymol must be given on an empty stomach and the midday meal should be light, but the usual evening meal may be taken. On the day of the administration of thymol, and for several days after, all alcoholic drinks, oils, and other solvents of thymol should be withheld; otherwise the absorption of the dissolved thymol will cause acute poisoning with rapidly fatal results. The thymol must be repeated every eight or ten days, until the ova cease to appear in the stools, or longer if the percentage of hæmoglobin does not rise. If the rise in the percentage of hæmoglobin is slight and cannot be accounted for, the thymol should be repeated. It must be remembered, however, that in old people it may take months, at times a year, before the normal hæmoglobin percentage is regained.

2. The regeneration of the blood. The ordinary methods in general use are of avail. B. K. Ashford and W. W. King (*American Medicine*, September 12, 1903).

VERTEBRÆ, FRACTURES OF THE.

Laminectomy is superior to a simple reduction of the deformity, since, in fractures of the arches, reduction has no certain effect upon isolated fragments, and reduction alone has hastened death. Reduction may be more rational when effected through the open wound of laminectomy. Simple reduction is useless where there are clots or adhesions sufficient in themselves to account for the spinal disturbance. In cases of cervical luxation without fracture simple reduction has given good results. It is possible still further to improve the prognosis of reduction in simple cervical luxations by making the reduction with the arches exposed and employing the silver-wire suture of the processes to prevent relapse. In consideration of the distressing prognosis in lesions of the cervical region an operation appears strongly indicated. Degeneration is observed wherever the narrowing factor is not removed.

The treatment of vertebral fractures without operation offers a chance of success only where there exists little or no disturbance of the spinal cord, such as paralysis of a single group of muscles, one-sided paralysis, or partial disturbances of sensibility, etc. In all cases where the usual assemblage of symptoms indicates a severe alteration of the cord, only prompt operations directly afford the best chances of securing improvement or cure. It is Dr. Mayer's opinion (*Annals of Surgery*, August, 1897, page 218) that, upon the evidence of statistics of recent years, an operation is justified no matter how doubtful the case may appear. While the operation is essentially experimental and its results problematical, the striking cures accomplished within recent years must spur us on to the perform-

ance of an operation. J. E. Owens (Annals of Surgery, September, 1903).

VIVISECTION, A CLERGYMAN'S DEFENSE OF.

"Here is, let us say, an ordinary good-natured and able physician whom we will call Dr. X. His whole aim and object is to diminish pain and to allay suffering. It is not in his power to destroy it; therefore he directs his efforts to alleviate it. He knows that men are by far the most sensitive of sufferers. He knows that they are subject to certain painful diseases. He has good reason to think that a certain treatment would bring great relief, and perhaps even produce a cure. But this reasoning may be defective, and he cannot ascertain, with any degree of certainty, whether his opinion be well founded unless and until he can test his theories by actual experiment. That is to say, he must actually apply the remedies. It is essential that he should make the experiment on a living organism of some kind. But on whom? Well, there are but two classes of creatures to choose from. He must make it either on a human being or else on a beast; either, let us say, on a sick child or on a rabbit. The antivivisectionist objects to all experiments on animals, and in effect answers: "The experiment must be made on the sick child, not on the rabbit!" And this is why we call the antivivisectionist cruel. We, on the contrary, hold that the experiment should be made on the rabbit or other beast, and not on the unfortunate sick child. Yet, on that account, we are called cruel. Our reason for maintaining this view is, first, because the beast is less sensitive to pain. Secondly, because its loss of life, should the experiment prove abortive, is of less conse-

quence. Thirdly, because the child is our own very flesh and blood, and a member of our great human family, and has immeasurably greater claims on our pity. Fourthly, because God has given men domain over the beasts of the field." Right Rev. Mgr. J. S. Vaughan (Humane Review; Journal of the American Medical Association, September 26, 1903).

YELLOW FEVER AND THE PANAMA CANAL.

Scarcely had the discovery of the dependence of malarial fever on the part played by mosquitoes of the genus *Anopheles* as intermediary hosts for the hæmatozoa, first observed by Laveran, been proved by observers in every part of the world, than a small band of American physicians demonstrated the like alternation of generations, as it used to be called, in the case of the parasite of yellow fever, which is also a microzoön, not a microphyte, the host being in most instances the *Stegomyia fasciata*, though other species prevalent in other regions are equally adapted for the purpose. And this discovery has removed the obscurity that formerly surrounded its etiology, presenting a full and satisfactory explanation of the previously insoluble problems of its geographical distribution, the evident noncommunicability of the disease when it appeared outside of its natural areas, although these areas were gradually widening; its attachment to the cargo rather than to the persons of the crew, who might escape, while the laborers engaged in unloading were attacked; the ease with which a ship is disinfected by so feeble a germicide (though active insecticide) as sulphur fumigation, and the cargo by mere breaking up and exposure to the air and

light—these and other apparent anomalies have now received a full explanation.

The demonstration of the disease as one which cannot, like small-pox or other fevers, be communicated directly from one patient to another, or the virus of which cannot be conveyed by fomites, renders all notion of quarantine unreasonable, and the recognition of its nature as the destructive action on the red blood-cells exerted by a hæmatozoön which, introduced by the bite of an infected *Stegomyia*, runs through this stage of its life-history within a few days of incubation and fever, after which it disappears unless taken up by a *Stegomyia*, in whose body it undergoes a transformation, extending over twelve to fourteen days, and retains its vitality and virulence for at least two months, being capable at any stage of this period of inducing the disease in a person in whom the *Stegomyia* may implant it in the act of biting. Save as regards its tolerance of low temperatures, the *Stegomyiæ* are among the hardiest of the gnats; but as the recognition of the connection of malarial fevers with the *Anopheles* enabled the Italian government to banish the disease from the convict settlement and island of Asinari by exterminating the insects and their larvæ, so by similar measures undertaken by General Wood, and carried out by his energetic sanitary officer, Major Gorgas, yellow fever has been stamped out in Havana, where, up to the year 1900, the deaths had, for one hundred and fifty years, amounted to hundreds or even thousands annually. Were it not for the *vis inertiae* of official apathy one would think that the knowledge thus gained would be applied in all the great centers of population and commerce, but there seems at present little

prospect of such activity, though in the Southern States, where the winter temperature is generally too low to permit of the disease persisting (that is, of the *Stegomyia* surviving until the following summer), in the smaller islands of the West Indies, and in the great cities of the South American Republics, especially of Brazil (where they are to a great extent isolated by the thinly peopled intervening country), the task of exterminating these insects should be much easier than it was at Havana, and would be in Cuba, Jamaica, etc. But Dr. Manson, who, by his discovery of the origin and mode of transmission of the parasitic nematoids in filariasis, twenty years ago, was the first to call attention to the function of mosquitoes of acting as intermediary hosts for the blood-parasites of man, has pointed out the possibility—indeed, unless the most strenuous preventive measures are adopted, the certainty—of yellow fever being introduced into Asia when direct commercial intercourse shall have been established through the opening of the Panama Canal. The social, economic, and sanitary conditions of the great seaports of China, India, and East Africa are even more favorable to its naturalization than those of its homes in Central and Southern America, and those of Australia, especially of Queensland, not less so, *Stegomyia* of one or other species abounding throughout the tropical zone. That yellow fever has hitherto been unknown in Asia is simply due to the fact that all trade between America, on the one hand, and Japan, China, Manila, Batavia, Singapore, and Australia, on the other, has been via the ports of British Columbia, California, and Chili, all of which lie well without the fever zone, and any ocean tramp sailing direct from, say, Rio Janeiro to Hong Kong, would

be too long on the passage for *Stegomyia* concealed in its hold to retain their infectivity even should they survive the voyage around Cape Horn. But with the opening of the isthmian canal totally new conditions will be established. A steamer from a port in Cuba, Venezuela, or Guatemala might take on board some *Stegomyia* that had recently bitten a fever patient, and a fortnight later, when the hæmatozoa had completed their metamorphosis, they might in their turn bite some of the crew, who would in three days sicken with the fever. They would probably be landed at the first port of call, and the local *Stegomyia* biting them would in due time communicate the disease in like manner to the native population, setting up an epidemic which, in the crowded native quarter of a Chinese city, would soon pass beyond control. Nor would it be necessary that cases of fever should occur on the voyage; *Stegomyia* taken on board would, after the vessel had left the port, seek the shelter of the hold, subsisting on any loose sugar, fruit, the blood of rats, etc., and perhaps breeding in the bilge or water-tanks. Not until the cargo was discharged need they leave their hiding-places, when they would attack the stevedores and native coolies engaged in unloading, who would sicken in their homes. This, indeed, occurred at St. Nazaire, at Cardiff, at Naples, and at Oporto, but in these places the disease did not spread farther, there being no *Stegomyia* so far north of the equator, at any rate as France and England, for they are found in some parts of Italy and Spain. In framing measures for guarding against the introduction of yellow fever it must be borne in mind that the disease is not carried by fomites, and that the patient is not a danger to his fellow-men any more than is the suf-

ferer from a malarial fever. It is only by yielding the parasite to the mosquito that the actual sufferer assists in carrying on the succession of cases, and, while he retains the power of infecting the *Stegomyia* for little more than a week, the latter is capable of inoculating men by its bite for a couple of months or longer. The patient may, therefore, be ignored and quarantine need not be entertained, the attention of the sanitary authorities of the port being concentrated on the exclusion of the *Stegomyia* from all vessels outward bound from ports within the endemic zone, whether the disease be actually present or not. To secure this Dr. Manson suggests that the sanitary control of the canal should be in the hands of the government of the United States as a branch of the Marine Service, and wholly independent of the administration and local functionaries of the canal itself, with an official chief at Washington, and a resident superintendent of the stamp of Major Gorgas, who so ably carried out the work at Havana, assisted by inspectors and their subordinates. Every vessel on entering the canal from any port within the fever zone should be boarded by an inspector, with a couple of assistants, who would immediately apply themselves to the work of searching for and destroying the *Stegomyia* and their larvæ, while at the Pacific end of the canal the vessel would be boarded by another inspector, whose duty it would be to certify to the completeness of the process before she would be allowed to put out to sea. To avert the danger of *Stegomyia* getting on board a ship while passing through the canal, as they might easily do after she had been certified as free, Dr. Manson suggests the clearing of all underwood from a belt half a mile in width on either side, and the drainage

and filling up of ponds and depressions that might afford shelter and breeding-places for the mosquitoes. The actual administration would, of course, be in the hands of Americans, but there might well be an international board of supervision, composed of representatives of those governments whose territories and commercial interests in Asia and the far East were concerned, as Great Britain, India, Australia, Japan, France, Holland, and perhaps others, while the expenses would be defrayed by tolls levied on all vessels passing eastward through the canal. In the discussion that fol-

lowed the reading of Dr. Manson's paper at the Epidemiological Society, Dr. Sambon remarked that the danger was even more imminent than was represented by the lecturer, since the China Commercial Steamship Company was about to open from March 1st a direct fortnightly service of cargo and passenger boats between Mexico and Hong Kong; so that yellow fever might be introduced into China apart from and before the completion of the Panama Canal. Charles Harrington and Edward F. Willoughby (*American Journal of the Medical Sciences*, August, 1903).

Books and Monographs Received.

The editor begs to acknowledge, with thanks, the receipt of the following books and monographs:—

The Significance of the Temperature in the Diagnosis of Extra-uterine Pregnancy during the Period of Collapse from Hemorrhage. By C. P. Noble, Philadelphia. 1903.—A Study of the Degenerations and Complications of Fibroid Tumors of the Uterus from the Standpoint of the Treatment of these Growths. By C. P. Noble, Philadelphia. 1903.—Some Features of Leprosy in the Hawaiian Islands. By Augustin A. Crane, Waterbury.—The Local Treatment of Acute and Chronic Gonorrhoea. By R. O. Kevin, Philadelphia. 1903.—Four Deciduous Teeth Extracted by an Injury, Replaced and Retained in a Healthy Condition. By S. E. Earp, Indianapolis, Ind. 1903.—The Technic of Vaccination and the Aftercare. By S. E. Earp, Indianapolis, Ind. 1903.—The Prophylaxis of Appendicitis. By H. Illoway, New York. 1903.—Cutaneous Angiomata and their Significance in the Diagnosis of Malignant Disease: A Statistical Study Based upon the Observation of Nearly Four Hundred Cases. By Douglas Symmers, Philadelphia. 1902.—Chronic Bilateral Parotiditis among the Insane, with a Detailed Account of Five Cases. By Douglas Symmers, Philadelphia. 1903.—Treatment of Tetanus by Means of Subcutaneous Injections of Carbolic Acid—Bacelli's Method—With a Review of Seventy-five Cases from the Literature. By Douglas Symmers, Philadelphia. 1903.—Acute Intestinal Autointoxication with Symptoms Resembling the Onset of Croupous Pneumonia. By Douglas Symmers, Philadelphia. 1902.—The Nature and Genesis of an Insane Delusion. By J. W. Wherry, Clarinda, Iowa. 1903.—A Case of Defective Speech, due to a Form of Spinal Cord Disease Resembling Disseminated Sclerosis. By G. Hudson Makuen, Philadelphia.—On the Development of the Faculty of Speech. By G. Hudson Makuen, Philadelphia. 1903.—The Influence of Catarrhal Diseases of the Nose and Throat in Producing Speech-defects in Children. By G. Hudson Makuen, Philadelphia. 1903.—Management of Malignant Disease of the Uterus. By George Erety Shoemaker, Philadelphia. 1903.—Uterine Fibroma near the Menopause. By G. E. Shoemaker, Philadelphia. 1903.—A Case of Perforation in Typhoid Fever, with Operation. By G. E. Shoemaker, Philadelphia. 1902.—Aids to Cystoscopic Practice. By F. C. Valentine, New York City. 1903.—The Boy's Venereal Peril. By F. C. Valentine. 1903.—The Chemistry of the Soil as Related to Crop Production. By Milton Whitney and F. K. Cameron. United States Department of Agriculture, Washington, D. C. 1903.—Insects Injurious in Cranberry Culture. By John B. Smith. United States Department of Agriculture, Washington, D. C. 1903.—The Description of Wheat Varieties. By Carl S. Seefeld. United States Department of Agriculture, Washington, D. C. 1903.—The Propagation of Tropical Fruit Trees and Other Plants. By George W. Oliver. United States Department of Agriculture, Washington, D. C. 1903.—Proceedings of the National Good Roads Convention held at St. Louis, Mo., April 27 to 29, 1903. United States Department of Agriculture, Washington, D. C. 1903.—The Choice of Technic in Operating upon Prostatic Obstruction. By Charles H. Chetwood, New York. 1903.—Some Phases of Gall-stone Disease, with Special Reference to Diagnosis and Treatment. By D. D. Stewart, Philadelphia. 1903.

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Sajous's Analytical Cyclopædia of Practical Medicine.

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THE DEATHS FROM TETANUS DUE TO THE FOURTH OF JULY CELEBRATION.

At the Twenty-ninth Annual Session of the Mississippi Valley Medical Association, held at Memphis, October 7-9, the following resolutions were adopted:—

“In view of the fact that more than 400 deaths from tetanus occurred following the Fourth of July celebration of 1903, as shown by the statistical report

elaborated by Dr. S. C. Stanton, of Chicago, and published in the *Journal of the American Medical Association* of August 29, 1903, the great majority of which might have been prevented had proper precautions been taken; therefore

"Be it Resolved, That the conclusions which follow, as offered by Dr. Stanton in a paper presented before the Association at the above meeting, be indorsed as the sense of the Association; and further

"Be it Resolved, That the secretary be instructed to forward a copy of these resolutions and conclusions to the medical press, Associated Press, and the secretaries of the several State Medical Societies, with the request that they publish same and take suitable action thereon.

"1. Enforcement of existing laws regarding the sale of toy pistols and other dangerous toys.

"2. Enactment of laws by the nation, States, and municipalities prohibiting the manufacture and sale of toy pistols, blank cartridges, dynamite canes and caps, cannon crackers, etc.

"3. Open treatment of all wounds, however insignificant, in which from the nature and environment there is any risk of tetanus.

"4. Immediate use of tetanus antitoxin in all cases of Fourth of July wounds, or wounds received in barnyards, gardens, or other places where tetanus infection is likely to occur.

"5. As a forlorn hope, the injection of tetanus antitoxin after tetanus symptoms have appeared."

Commentary.—The issue of the *Journal of the American Medical Association* in which Dr. Stanton published his report also contains an editorial from which the following lines are quoted: "It is evident that the treatment of tetanus must be prophylactic, for the returns from these cases of the Fourth show how little has been accomplished in the direction of cure. But a very small percentage of recoveries—apparently under 5 per cent.—has occurred, in spite of quite general use of antitoxin. It has been well said that the patient who is just showing tetanic symptoms is not beginning to have tetanus—he is beginning to die from it. The spasms of tetanus are practically the death-agonies of an infection that has existed several days before their onset, and experience has shown that tetanus antitoxin is then of but little value. We may look to Fourth of July tetanus to furnish us with much information concerning the treatment of the disease, since these cases constitute such a large and concentrated part of our experience, but so far the results have only served to emphasize the importance of prophylaxis and the *futility of curative measures*. Surgeons who have carefully cleansed and drained blank-cartridge and fire-cracker wounds have had few cases of tetanus; surgeons who have also given antitoxin while the wound was fresh have had none."

Unfortunately, these statements are, in the main, true; but we must disagree with the writer when he emphasizes "the futility of curative measures," for the literature of the subject contains considerable evidence to the contrary. D. Sym-

mers (*American Medicine*, August 15, 1903), for example, has recently reviewed the results obtained by means of Baccelli's method in various countries, and found that the mortality in 75 cases had been 22.66 per cent. Twenty of these cases are given by him in detail in the table on page 404, which includes, as may be seen, only three cases treated in Italy, where, it has been erroneously stated, tetanus is milder than elsewhere.

Symmers also refers to the 290 cases collected by Moschovitz, in which subcutaneous and intravenous injections of antitetanic serum gave a mortality of 40.33. That of the 147 acute cases,—such as those referred to in the editorial,—however, was somewhat larger, namely: 51.07 per cent. There is a considerable margin in favor of the Baccelli method, therefore, and, while we must not lose sight of the fact that statistics of cases published in medical journals usually represent series which contain one or more cases in which recovery ensued, the fact remains that these instances sustain the contention that “curative measures” are not always futile.

Elsässer, also, in a recently published paper (*Deutsche Zeitschrift für Chirurgie*, July, 1903) advocates energetic disinfection of the wound, and besides the measures usually employed to arrest spasm, including chloroform narcosis, the immediate use of carbolic acid injections, beginning with 1 cubic centimeter (16 minims) of a 3-per-cent. solution every second hour. He adds to these measures subcutaneous injections of decinormal salt solution in every case. His mortality was 58.3 per cent. in twenty-four cases thus treated. As suggested by Dr. Symmers's table, it is probable that a freer use of carbolic acid injections would have reduced the number of deaths. Thus Nietert and Amyx (*St. Louis Medical Record*, December, 1899) treated four cases by injections of a 2-per-cent. solution. The first received 21 $\frac{1}{2}$ grains in 84 hours; the second, 11 $\frac{3}{4}$ grains in 30 $\frac{1}{4}$ hours; the third, 8 grains in 16 hours; while the fourth was given 99 grains during the first 24 hours, and 177 grains in the course of the following 7 days. The last case was the only one saved.

The subcutaneous injections of saline solution, recommended by Elsässer, have also been found advantageous by Kleiner (*Archives of Pediatrics*, May, 1895), E. J. McOscar (*American Medicine*, September 14, 1901) (the latter in addition to venesection), and others. If, as I believe, the convulsions are mainly due to the accumulation of waste-products in the blood-stream, we have in frequently repeated injections of this class a ready and efficient means for the rapid elimination of at least a portion of these toxic wastes—the excess perhaps to which the fatal termination is due (see MONTHLY CYCLOPÆDIA for April, 1903).

Very suggestive in this connection are the following lines by Dr. A. P. Mathews, of Chicago (*Yale Medical Journal*, June, 1903), which refer to investiga-

AUTHOR.	PUBLICATION.	AGE.	INCUBATION.	TREATMENT.	TOTAL QUANTITY OF ACID.	AVERAGE DAILY DOSE.	DURATION OF TREATMENT.	RESULT.	REMARKS.
1 Kellogg.....	American Medicine, Feb. 15, 1902, p. 29.	13	8 days.	0.5% sol., K. Br.	15 grs. (estimated).	0.35 gr	42 days.	Cure.	Systemic poisoning on third day. Small "average daily dose" depends upon fact that at the close of many injections were given at long intervals.
2 Nowlin.....	Medical Record, April 5, 1902, p. 535.	Adult.	10 days.	1 to 80 sol., morphine, chloral, strychnine.	22 grs.	1.5 grs.	15 days.	Cure.	
3 Mitelli.....	Lancet, Nov. 12, 1898, p. 1304.	21	10 days.	3d to 5th day, 4% sol.; 6th to 21st day, 5% sol.	87.2 grs.	4.1 grs.	21 days.	Cure.	
4 Salvoli.....	La Brit. Medicine, 1901, p. 542.	49	30 days.	2% sol.	28.8 grs.	5.7 grs.	5 days.	Death.	Patient mental and physical wreck.
5 Lawson.....	Brit. Med. Jour., June 3, 1899, p. 1333.	20	8 days.	1 to 20 sol., K. Br., chloral, morphine, intracerebral 19., 2.5 c.cms. strychnine and 65 c.cms. subcutaneously.	16.6 grs.	2.8 grs.	6 days.	Cure.	
6 Zienzo.....	Gazz. d. Osped. e d. Clin., No. 121, 1898, p. 1292.	52	8 days.	3% sol., morphin.	216 grs.	8 grs.	27 days.	Cure.	Albuminuria.
7 Woods.....	N. Y. Med. Jour., Sept. 9, 1899, p. 377.	12	10 days.	10% sol. cannalis Indiba.	398 grs. (estimated).	18 grs.	21 days.	Cure.	Urine smoky on second day of treatment.
8 Henry.....	Amer. Jour. Med. Sciences, Dec. 1901, p. 776.	19	Either 11 or 15 days.	Dilute carbolic.	303 grs.	43.2 grs.	7 days.	Death.	Albuminuria; hyaline and granular casts. Highest dose in one day, 3.88 grams (60 grains).
9 Maragliano.....	La Med. Moderne, Sept. 4, 1901, p. 281.	18	15 days.	Dilute solution.	225 grs.	9 grs.	25 days.	Cure.	
10 Eldowes.....	Lancet, Jan. 16, 1897, p. 168.	41	20 days.	2% sol., K. Br., chloral.	10 grs.	2 grs.	5 days.	Cure.	
11 Smart.....	Brit. Med. Jour., May 25, 1901, p. 1270; Liverpool Med. Chir. Jour., Sept., 1901, p. 399.	33	"Idiopathic"	1 to 50 sol. antitoxin, morphine, chloral, K. Br.	11.5 grs.	3.2 grs.	3% days.	Cure.	
12 Parker.....	Lancet, Nov. 24, 1894, p. 1230.	14	30 days.	1 to 20 sol., antitoxin.	12 grs.	.....	12 hours.	Cure.	Carbolic discontinued and antitoxin substituted after first day.
13 Morris.....	Lancet, Jan. 27, 1894, p. 205.	22	15 days.	Carbolic, chloral, morphine, physostigma.	27 grs.	6.7 grs.	4 days.	Cure.	Acid injection into rectum.
14 Hayes.....	Brit. Med. Jour., Dec. 22, 1900, p. 1779.	Adult.	9 days.	1% sol., morphine, chloral, antitoxin.	0.2 gr	.....	12 hours.	Death.	Carbolic discontinued and antitoxin substituted.
15 Schwartz.....	Contributions für Bakt. u. No. 24, 1891, Bd. 3, p. 120.	15	14 days.	Dilute sol., chloral, antitoxin, warm baths.	.....	.....	.....	Cure.	Antitoxin commenced on eleventh day of illness.
16 Enriquez.....	Mix. Soc. Méd. des Hôp. de Paris, Dec. 20, 1901.	.....	.....	2% sol., antitoxin.	3.9 grs.	1.3 grs.	3 days.	Cure.	150 to 200 grams of blood withdrawn and 200 grams artificial serum + 3 c.cms. of acid hypodermically.
17 Domenichini.....	Gazz. Med. Lombarda, Sept. 21, 1902, p. 371.	47	5 days.	1st to 10th day, 2% sol., 11th to 22d day, 3% sol.	119.7 grs.	5.4 grs.	22 days.	Cure.	
18 Laplace.....	Med. Bulletin, March, 1900, p. 93.	32	10 days.	50% sol. 20 c.cms. of serum injected into subclavicular space and 40 c.cms. subcutaneously.	240 grs.	40 grs.	6 days.	Cure.	
19 Musgrave.....	Medical Dial, April, 1902, p. 99.	Adult.	12 days.	Dil. sol., morphine.	100.8 grs.	7.2 grs.	14 days.	Cure.	
20 Livingston.....	Reg. Med. Visitor, March, 1901, p. 55.	21	About 20 days.	33% sol. in glycerin and water.	504 grs.	84 grs.	6 days.	Cure.	No ill effects.

tions by Dr. S. A. Matthews and Mr. O. H. Brown, and in which the author himself must have taken part, judging from various portions of the text: "As a result of a large series of experiments it was found that if a solution of sodium chloride, sodium sulphate, and sodium citrate was injected very slowly intravenously a diuresis was set up with no rise in blood-pressure and without blood-dilution, so that the salts act on the kidney itself. Furthermore, the kidneys thus stimulated would throw out of the body so much more liquid than was put in in the injection that there was no tendency toward œdema. The kidneys, in fact, would excrete so much water that the body was partially dehydrated, and excretion fell to a point in which it only equaled the amount run in. When this point was reached it was found that if water or salt was put into the stomach or the peritoneum the secretion began again with great abundance. One can in this way wash the body by drawing through it a great quantity of fluid. In one instance a rabbit secreted four hundred cubic centimeters in two hours; but this was very unusual. The urine in such cases became almost free from urea and other nitrogenous substances, and this not because they were not formed in the body, but because they were washed out in the diuresis. The urine so secreted contained no albumin, but it does contain some sugar, a point which is being followed further. The rabbits, after being so washed, recovered completely, with no unfavorable effects.

"These results suggested that by means of this diuresis the tissues of the body might be washed free, not only from their metabolic products, but also from poisonous substances; that a sort of cell-catharsis was possible. It might be possible to wash out of the body toxins of the bacterial infections, and poisons which act on the kidney might be so diluted that their harmful action would be lost. A third possibility suggested itself, also, namely: that we might be able to stimulate the antitoxic-forming power of the body by these intravenous salt injections, or even by salts to neutralize poisons. The field thus opened up is so large that we have been able to do no more than to make a beginning, but the results, I think, may be conservatively spoken of as encouraging.

"As the most severe test of hypothesis, rabbits were injected by Dr. Matthews with fatal doses of tetanus toxin, and forty-eight to sixty hours after the injection, when the symptoms of the disease were just appearing, they were washed with this solution. The results so far have been decidedly favorable, the washed animals in nearly all cases, if taken early, surviving, the control animals dying. Although a large number of experiments have been tried, the variability in susceptibility renders it necessary to go cautiously and make a very large series of experiments. If the disease is well advanced the washing has been found so far to be useless. The encouraging results so far obtained make us hope that a modified solution will possibly do better."

I have previously referred (*"Internal Secretions and the Principles of Medicine,"* volume i, page 784) to the fact that tetanus was one of the diseases in which a reduction of the alkaline salts in the blood-stream could be distinctly discerned. Experimental evidence not only sustains this view, but points to the use of intravenous injections of saline solution *as soon as the case is reached* and their frequent repetition as a life-saving measure, in addition to Baccelli's method and the use of tetanus antitoxin.

C. E. DE M. SAJOUS.

Cyclopædia of Current literature.

ABDOMINAL WOUNDS, A NEW METHOD OF CLOSING.

The peritoneum is approximated with a silkworm-gut suture, introduced in the same manner as an ordinary subcuticular suture, whose two ends are brought through the integument near the extremities of the incision. This permits the removal of the suture at any time. The abdominal fasciæ are united by figure-of-eight sutures, the ends of which, instead of emerging near the margins of the wound, are carried by long Hagedorn needles through the adipose tissue, and emerge on a line parallel with the abdominal incision and from one and one-half to two inches either side of it. A U-shaped metal plate is now laid about the wound and the sutures drawn taut and tied, two and two, about notches in its sides. The skin incision is united by a subcuticular suture. All sutures are of silkworm gut. As all the sutures emerge through the skin they can all be removed. O. O. Witherbee (*Journal of the American Medical Association*, October 10, 1903).

AGGLUTINATION AFFINITIES OF RELATED BACTERIA PARASITIC IN DIFFERENT HOSTS.

There exist agglutination relationships between the pathogenic groups of

bacilli which ferment dextrose. These relationships are not brought out clearly unless the agglutinative limit of the various cultures is worked out with a serum agglutinating its specific bacillus in dilutions of 1 to 1000 and more. Agglutinative characters are probably modified quantitatively when the same bacillus becomes parasitic upon different hosts, some being weakened or suppressed, others augmented. Close agglutinative affinities may be predicted from close biological and pathogenic relationships. Minor cultural differences involving membrane formation in bouillon and differences in the appearance of surface colonies do not exclude close agglutinative affinities. It is not possible to trace the members of this group, attacking man back to the animal species from which they may have come by agglutinative tests alone. This may perhaps be done in combination with cultural and pathogenic tests after the various races parasitic upon different animal species shall have been more thoroughly identified. Closely related bacteria vegetating on mucous membranes may vary considerably in their agglutinative relationships, differing in this regard from the more invasive species whose varieties or races are more homogeneous. Of the pathogenic cul-

tures examined, *bacillus icteroides* and the hog cholera bacillus *a*, on the one hand, and spermophile and guinea-pig diseases *a* and *b* possess nearly identical agglutinative properties. The typhoid bacillus shows slight agglutinative affinities with the group of motive bacilli isolated from animals. The typical colon bacillus shows more. Identical biochemical properties of *bacillus coli* from the same host are associated with close agglutination affinities. Two races of bacilli whose sera agglutinate both races the same quantitatively may be acted upon differently by the serum of a third race. Guinea-pigs and rabbits immunized in the same way with the same culture yield sera whose agglutinins are the same qualitatively. Exact quantitative uniformity may or may not be obtained, and depends upon the relative susceptibility of the animal and the use of living or dead cultures. Theobald Smith and A. L. Reagh (Journal of Medical Research, May, 1903).

ALEXINS, ORIGIN OF THE.

Turro (Berliner klinische Wochenschrift, September 7, 1903) says that alexins—lysins, bacteriolytic substances, cytosols, etc.—are substances which act chemically upon the protoplasm of the bacteria, converting it into an amorphous soluble mass. This process is called bacteriolysis. The alexins are a product of the cell-plasma, derived from the liver, the spleen, the kidneys, the epithelium of the thyroid gland, the white blood-cells, etc., and become active by a previous solution in water containing the physiological percentage of salt. The properties of individual alexins depend upon their source in the various cells, being positive on certain forms of bacteria and negative on others. They have been shown experimentally to be

present in the thyroid gland; the capsule of the adrenals; the renal tissue; in the lymph-glands, the muscles, the liver, and the spleen; in the blood-plasma, and in the yolk of the egg after previous solution in albumin. Chemically, they are to be regarded as enzymes which devour bacteria by a progressive hydrolysis. The greater or less resistance of the organism to an infection (natural immunity) depends upon the facility of the cell-plasma in liberating alexins and, in consequence, their activity. (New York Medical Journal and Philadelphia Medical Journal, October 17, 1903.)

ALKALINITY OF THE BLOOD.

An examination of the blood of 63 patients suffering from various ailments has been made by W. Orłowsky (Deutsche medicinische Wochenschrift, No. 34, 1903), with particular reference to the alkalinity. In health the alkalinity ranged from 240 to 267 milligrams of sodium hydrate in 100 cubic centimeters of blood with the litmus test. In disease the alkalinity was found proportional to the number of red cells, declining when there were few red cells and increasing when they became greater in number. The internal administration of an alkali or giving the latter in a tepid enema had only a transient effect in increasing the alkalinity, although the second method seemed to have a more pronounced effect than the former. (Medical News, October 17, 1903.)

ANÆSTHESIA BY INTERRUPTING CONDUCTIVITY OF NERVES.

Solutions of cocaine and allied substances can be used by perineural or endoneural injection to interrupt the conductivity of nerves. An excellent local

anæsthesia is thus brought about. Endoneural injections are generally possible only after the nerve-trunks have been dissected out with infiltration anæsthesia; this would prolong the operation quite extensively for amputations, but in inguinal hernias, varicose veins, operations on the anterior aspect of the neck, the time lost is generally slight. For perineural injections, concentrated solutions are necessary unless adrenalin is added (1 to 2 drops of the commercial solution to every cubic centimeter of 1-per-cent. cocaine solution) or unless the extremities are tied off. In mixed nerves the motor and often the vasomotor nerves often are paralyzed as well. An accurate knowledge of the nerve-distribution is absolutely necessary. For superficial nerves, a $\frac{1}{2}$ -per-cent. eucaine solution with adrenalin seems to be best. It may take up to thirty minutes before anæsthesia appears; it generally lasts from two to five hours.

Enderlen saw a fatal result after 6 cubic centimeters ($1\frac{1}{2}$ drachms) of a 1-per-cent. cocaine solution with 6 drops of adrenalin. Trying it upon himself he obtained absolutely no effect. Perthes could perform many operations upon fingers and toes, extraction of teeth, tendoplasty, etc., successfully without after-effects. Braun (German Surgical Society; Medical News, October 17, 1903).

ANTITOXINS AND AGGLUTININS.

The writer investigated the question as to whether the antitoxins and the agglutinins of tuberculosis act in an analogous manner, or whether they may both be considered as substances derived specially from phagocytes. As regards the amount of agglutinins in different parts of the blood, the author

found the lowest agglutinating values in the serum and the highest in the extract of the corpuscles; and, further, that there was a marked difference in the agglutinating power between the serum of centrifugation and the serum of separation, and little difference in this respect between the serum of separation and the clot of coagulation. As regards antitoxic powers, the serum of separation and the extract of the clot always showed a high value. The serum of centrifugation, on the other hand, was not so powerful. The author concludes that the antitoxins and agglutinins of tuberculosis do not circulate free in an animal's blood in large quantities, that they are present in small amounts in the plasma, and that the greater part of them is in the cellular elements of the blood. Figari (New York Medical Journal and Philadelphia Medical Journal; from Gazzetta degli Ospedali e delle Cliniche, June 28, 1903).

APPENDICITIS, CUTANEOUS HYPERALGESIA IN.

Cutaneous hyperalgesia is probably present at some time during all first attacks of appendicitis, except perhaps in the fulminating type, and depends upon tension within the appendix. It may be absent in attacks after the first, if the first attack was of sufficient severity to destroy nerve-tissue in the wall of the appendix. When present in attacks subsequent to the first it often persists long after all other signs of the disease have gone, owing to the tension within the appendix being kept up by the presence of a stricture. It gradually disappears during convalescence as the other signs of the disease clear up. Disappearance of cutaneous hyperalgesia without improvement in the general condition of the patient is a sign of per-

foration or gangrene of the appendix, and should be a signal for immediate operation. The presence of cutaneous hyperalgesia is no contra-indication to operation. Abscesses may form and general peritonitis may develop while it is present. Its absence, on the other hand, is of great importance. Absence of cutaneous hyperalgesia, the patient coming under observation early in the first attack of appendicitis, is a sign of gangrene of the appendix unless the case is obviously a mild one and the patient is rapidly getting well. Cutaneous hyperalgesia is, as a rule, absent in cases of abscess of the appendix. The age of the patient and the position of the appendix have no influence upon the cutaneous hyperalgesia. It is occasionally of use as an aid to the diagnosis of appendicitis. J. Sherren (Lancet, September 19, 1903).

ASCITES, THE TREATMENT OF, BY OPERATION.

The writer concludes that there is indisputable evidence that cirrhosis of the liver, accompanied by ascites, is not always a hopeless disease. The ascites can be permanently cured in a considerable percentage of cases by operation. There is reason for thinking that the operation of epiploorrhaphy may not only cure the ascites, but also lead to partial regeneration of the damaged liver-cells. Tapping alone has occasionally cured ascites, and should be tried once, or oftener, before proceeding with the more serious operation. The operation of epiploorrhaphy is a formidable one, and should only be undertaken in selected cases. The divergent opinions respecting the significance of ascites in cirrhosis of the liver are best explained by assuming that the disease has more than one type, and that, while in one

class of cases, owing to the damage sustained by the hepatic cells, the patient is hopelessly incurable by the time ascites has appeared, in a second—and probably more numerous—class the incidence of the poison has fallen more especially on the hepatic connective tissue, leading to injurious pressure on the portal venous system and peritoneal effusion before the liver-cells have become seriously damaged. Sinclair White (British Medical Journal, October 10, 1903).

BILHARZIA DISEASE.

The writer studied fifty cases of this disease with special reference to the characters of the white corpuscles found in the blood and urine, and reached the following conclusions:—

1. *Histological Characters of the Blood.*—(a) The percentage of the coarse-grained eosinophile leucocytes is, with very few exceptions, much above the average percentage found in normal blood. (b) This increase goes hand in hand with a proportional diminution in the percentage of the polymorphonuclear leucocytes. (c) Less frequent is an increase of the large mononuclear leucocytes, and where this is present it is associated with a diminution of the lymphocytes.

2. *Histological Characters of the White Blood-corpuscles in the Urinary Sediment.*—A very large proportion of the leucocytes found in the urinary sediment are coarse-grained eosinophiles, the remainder being almost all polymorphonuclears, lymphocytes and large mononuclear leucocytes being uncommon.

3. *Variations in the Number of Ova in the Urine.*—The ova vary in number greatly from day to day; very large quantities of blood and other cells are often present when but few ova can be

found. S. R. Douglas and F. W. Hardy (Lancet, October 10, 1903).

BILIARY PASSAGES, SURGERY OF.

A symptom-producing gall-bladder so seldom ceases to give trouble without surgical treatment that an early operation before permanent crippling has been done is the safest. In simple, uncomplicated cases of cholelithiasis or catarrhal cholecystitis, with practically a normal gall-bladder, cholecystotomy with drainage until infection has disappeared is usually safe and most convenient. Atrophied gall-bladders with thick, friable, and inelastic walls, those with destruction of more or less of the mucous membrane, and especially those where the cystic ducts are not free, should be removed, as this offers the best chance for complete cure. Stone in the common duct should be removed by incision without suture of the duct. In cases of temporary obstruction of the common duct cholecystotomy is the safest method of relief until the obstruction disappears. In permanent occlusion of the common duct the best results are obtained by anastomosing the gall-bladder with the bowel. The same line of treatment is applicable in all cases of cholecystitis and cholangitis, whether or not complicated by gall-stones. B. B. Davis (Western Medical Review, September 15, 1903).

CHLORIDES IN NEPHRITIS. ELIMINATION OF.

The writer has investigated the advantages of the method proposed by Achard and Mauté, for the determination of the functional condition of the kidneys. This method consists in administering to the person to be examined 10 grams of sodium chloride daily, and then watching the amount of

chlorides in the urine. In normal persons this amount rises soon after the beginning of the test, and sinks again after discontinuing the administration of chlorides. On the other hand, the French authors named assert that in persons with nephritis the behavior of the chlorides in the urine is quite normal, as a rule. In one series of patients they found normal conditions to prevail as regards the elimination of chlorides after this test. In another series there was a sudden increase, followed by a sudden decrease of chlorides, but besides there was also a marked and proportional increase of substances other than chlorides,—*i.e.*, of substances belonging to the urea group,—this increase persisting, in fact, after the cessation of the experiment. In a third series the rise of the chlorine curve was retarded for a few days and the fall was gradual, and in a fourth series the amount of chlorides was not increased, after the ingestion of the salt given, but there was an increase in the elimination of the substances other than chlorine. The present author studied the effects of administering chlorides to healthy persons and to persons with nephritis. As the result of this study he concludes, at the outset, that the elimination of chlorides may be altered in nephritis. The daily amount excreted in health with ordinary diet is fairly constant, but in nephritis the daily amount is subject to very marked variations. The amount of water excreted is also subject to daily variations. This was observed in both the cases of interstitial nephritis studied, while the case of parenchymatous nephritis did not show such variations, except at occasional intervals.

In all the cases observed the elimination of sodium chloride after administering this salt in the manner described

was abnormal. In the cases of interstitial nephritis the behavior of the chlorides varied. Thus, in one case there was no rise in the chlorides on the days following the administration, and only a slight rise on the second day. In another, on the other hand, the administration of 10 grams of sodium chloride evoked an increase of 14 grams daily in the elimination of chlorides. In this case the salt ingested stimulated the kidneys—or rather the portions of these organs that had remained intact—to increased activity. At the same time the amount of water and of all the other constituents of urine were increased. In chronic parenchymatous nephritis the kidneys did not respond to the stimulus of the chlorides, and the elimination of the other components was not increased. In a case of heart disease in which there was a stasis of the kidneys there was no response to the stimulus of sodium chloride. The author concludes that certain inconstant variations in the amount of chlorine eliminated take place after the ingestion of chlorides in nephritis, and that the chloride test may prove of value, when more fully studied, in determining the functional activity of the kidneys. F. de Grazia (*New York Medical Journal* and *Philadelphia Medical Journal*; from *Riforma Medica*, June 8, 1903).

CHOLELITHIASIS, INDICATION FOR OPERATION IX.

Gall-stone disease is due to a mycotic invasion of the bile-tracts. Gall-stone disease is exceedingly common. In the author's dissecting-room experience it occurs in 16 per cent. of cadavers. In the vast majority of cases of gall-stone disease the patient does not suffer from the existence of the condition. A close parallel cannot be drawn between chole-

lithiasis and appendicitis, and the conclusions accepted in appendicitis—*i.e.*, that a diseased appendix should in practically all cases be operated on—cannot with equal force be applied to cholelithiasis: (*a*) Because the disease, in its first manifestations, does not carry with it nearly the amount of danger to the patient as does appendicitis. (*b*) Because, of the enormous number of individuals who have gall-stones, many have slight, single, or very infrequent manifestations of the disease, which are speedily recovered from, carry little danger and a good prospect of permanent recovery. As a corollary the hygienic treatment—*i.e.*, exercise, diet, salines—is indicated in cholelithiasis, as a rule, in the first manifestations of the disease. Surgical treatment is indicated when the manifestations of the disease are repeated, and especially when they are frequent and severe. Surgical treatment is demanded in the presence of: (*a*) an infected gall-bladder; (*b*) with stone or obstruction of the cystic duct; (*c*) with stone or obstruction of common duct. With stones still confined to the gall-bladder, cholecystotomy with drainage is the operation of choice. With stone in the cystic duct, or obstruction of cystic duct, cholecystectomy is the operation of choice. With stone in the common duct, choledochotomy with drainage is the operation of choice. With stone in both cystic and common ducts, cholecystectomy and removal of stone from common duct, and drainage of common duct, is the operation of choice. With obstruction of common duct from chronic interstitial pancreatitis or carcinoma, drainage of the bile-tracts through the gall-bladder is the operation of choice. In the cases of cholecystitis and cholangitis simulating

gall-stones, drainage of the gall-bladder should be carried out, and with this probability the use of salicylate of sodium, which is excreted through the bile, and has seemed to exert a definite local antiseptic effect.

To expose the bile-tracts, the incision introduced by the writer in 1898, as modified by Weir and Mayo Robson, gives the best access to the region, makes the operation in difficult cases much easier, saves valuable time, and is least likely to be followed by hernia. The mortality from gall-stone operations is surprisingly small in uncomplicated cases. The writer has had no deaths in more than 100 cholecystotomies, and in more than twenty cholecystectomies has had but one death in fourteen cases of obstruction of the common duct. The prospects of permanent cure after operative removal of gall-stones are very good. The recurrences of symptoms are almost always due to incomplete operations: *i.e.*, leaving some stones or the doing of a cholecystotomy where a cholecystectomy should have been done.

Personally, the writer has seen little evidence pointing to gall-stones as a factor in the production of carcinoma, and therefore inclines to the belief that carcinoma favors gall-stone formation, and is the cause, and not the effect, where these two conditions coexist. The modern surgical treatment of cholelithiasis is, with the exception of the surgical treatment of appendicitis, the most valuable addition that has been made to medicine during the last twenty years. Inasmuch as the general practitioner sees most of these cases in their early history, it rests with him whether or not this valuable knowledge will be made the most of and accomplish the greatest amount of good. Arthur Dean

Bevan (Transactions of the Chicago Surgical Society; Annals of Surgery, September, 1903).

DIPHTHERIA TOXINS, THE TOXIC CONSTITUENTS OF.

The author finds that the affinity of diphtheria toxin for antitoxin is very great, but he emphasizes the fact that the bacillus of diphtheria produces several kinds of toxins. Hence the avidity deviations cannot be accounted for by supposing the presence of one toxin endowed with feeble affinity. Nor can this be attributed to the presence of a single toxin which has lost its affinity. A bouillon always contains toxins endowed with varying affinities, and these give it a correspondingly great number of degrees of avidity for antitoxin. Ehrlich (Berliner klinische Wochenschrift, September 14, 1903).

EPILEPSY, METABOLISM IN.

The authors find that the quantity of urine was normal in the majority of cases; the color varied from straw-color to golden; the specific gravity was always high, even when an increased quantity of urine was eliminated; acidity was normal, or slightly below normal; phosphoric acid varied within normal limits; the amount of urea corresponded to that considered as medium by authors in general, but it was less than that which should have been eliminated with the diet given; the quantity of chlorides was generally above the normal, though at times it reached the normal. No connection was apparent between the variations in these elements of the urine and the occurrence of epileptic seizures. An increase in indican and no trace of albumin were found

after an epileptic seizure. G. Sala and O. Rossi (*Medical News*; from *Gazzetta Medica Lombarda*, August 16, 1903).

FEVER AND ITS INFLUENCE ON GLYCOSURIA.

In a series of experiments on rabbits the writer found that, when fever had been produced by aseptic puncture of the brain, injections of adrenalin invariably caused the appearance of sugar in the urine without lowering the temperature. In fever due to streptococcal infection, however, similar injections of adrenalin did not cause glycosuria. He concludes, therefore, that the disappearance of glycosuria in diabetes is not due to the high temperature, but to the bacterial infection. F. Richter (*Berliner klinische Wochenschrift*, September 14, 1903).

FRAGILITAS OSSIUM.

The condition is most common in dementia and chronic melancholia; general paralysis does not present the change so markedly. The disease is much more frequent in the female sex, among whom it occurs earlier than in men. It is comparatively rare before the ages of 45 or 50, except in general paralysis. It is essentially a morbid change which occurs in late middle life and old age. It is not a marked pathological condition in men suffering from general paralysis. It is seldom present in epilepsy. The chronic degenerations of nerve-cells must interfere with the physiological processes of bone-formation and absorption, by removing the trophic influences. The minerals are carried away quicker than they are deposited, the parts nearest the bloodstream—the Haversian spaces—being first affected. The dense bone is permeated by porosities, and finally frac-

ture occurs. W. M. Smith (*British Medical Journal*, October 3, 1903).

GASTROCOLIC FISTULA.

The writers describe a case of pyloric carcinoma which suggested clinically a case complicated by gastrocolic fistula, but autopsy showed that there was no fistula. The case proved to be one of faeculent vomiting in gastric cancer, without any communication between the stomach and intestine or any obstruction of the intestine. The clinical characteristics of gastrocolic fistula may be divided into three classes: (1) the latent cases, which exhibit no evidence of the presence of the fistula, and which are of interest only from a pathological standpoint and need not be further mentioned here; (2) the cases in which there is faecal or faeculent vomiting, usually with other notable signs of the condition; and (3) the cases in which there is no faecal or faeculent vomiting, but in which there are other signs that at least suggest the existence of a fistula or may make a definite diagnosis possible. The cases with faecal or faeculent vomiting are the most striking, and are more likely than the others to be correctly diagnosed, though under some circumstances they are also extremely likely to cause grave errors in the diagnosis. The vomiting comes on quite suddenly; and the pronouncedly faecal or faeculent character of the vomited matter is shown at once—not gradually, as in acute peritonitis or intestinal occlusion. The vomited matter is usually brownish; it resembles the ordinary contents of the large intestine; and at times it consists of well-formed faeces; *i.e.*, it is not simply faeculent. Gastrocolic fistula is indeed apparently the only condition in which actual formed faeces are ever vomited. With the faecal

vomiting there is often a persistent faecal odor to the breath. Finally, the vomitus is often of exactly the same character as the stools. The other signs of the condition are common to both the second and the third classes of cases and may be present or absent in either. Among these other signs those of principal importance are: If air is pumped through the rectum the stomach will become dilated and gas will be belched. The right half of the transverse colon and the ascending colon will either remain undilated or will only dilate after the stomach. There may be present a severe diarrhoea, lenteric in character, large particles of wholly undigested food being passed soon after food is taken. Emaciation is likely to be rapid and extreme. In cases in which vomiting is easily produced, if colored or other easily recognizable substances are introduced into the rectum they may be recovered in the vomit. If the stomach washing be tried it will be found that only a small amount of the water introduced can be recovered by the stomach-tube; the greater portion will be expelled by the bowel. Inflation of the stomach may show that the air passes directly into the colon. D. L. Edsall and C. A. Fife (*American Medicine*, October 10, 1903).

INFANT-FEEDING.

The first essential in the artificial feeding of infants is to have a definite plan upon which to go and to avoid haphazard procedures. Diluted cows' milk, condensed milk, and peptonized milk may be regarded as the positive, comparative, and superlative of digestibility, respectively, and should be tried in that order until the digestive power of the child is suited, due regard being paid to the details of administration. Period-

ical weighing of the child is the only test of the success or failure of the food selected. In cases in which even peptonized milk fails to give good results, great benefit often follows the administration of gray powder, even in cases in which there is no reason to suspect a syphilitic taint. In spite of all care and the use of the above methods there remains a residuum of cases in which progressive wasting persists. Many of these seem to be babies who are unable to digest the casein of cows' milk in any form. In such a case one should try to procure a wetnurse for the child, and, failing that, one must eliminate casein from the diet by making whey the basis of the feeding mixture. The use of a patent food as the sole article of diet for a baby is rarely, if ever, necessary, so long as cows' milk can be obtained, either fresh or condensed. If a child is unable to digest much cows' milk it is often worth while to try the effect of adding a little starchy food to the diet, even at an early age, for inability to digest milk appears to be sometimes accompanied by an unusual capacity for the conversion of starch. R. Hutchison (*Lancet*, September 19, 1903).

KNEE-JOINT, LOOSE CARTILAGES IN THE.

There are three theories to account for the origin of these bodies: 1. The nucleus is supposed to be a clot of fibrin, a bit of torn fringe, or a fragment of semilunar cartilage. 2. Such bodies are originally osteophytic growths on the lips of the articular surfaces, and become "nices" by being broken off. 3. They are actual bits of articular cartilage set free by traumatism. The author considers that this latter theory is the correct one in the vast majority of cases. E. A. Codman (*Boston Medical and Surgical Journal*, October 15, 1903).

LYMPH-CIRCULATION.

The amount of tissue-lymph varies at different times of the day and each variation is of short duration. The ingestion of food produces a rapid flow of lymph into the tissue-spaces, acquiring its maximum an hour after meals and disappearing slowly. The digestive curve of variation always follows the same general type, with a rapid rise, a short acme, and a very gradual subsidence.

As the digestive lymph-wave develops, there is a rise in the percentages of the corpuscles, of the hæmoglobin, and of the specific gravity of the blood: *i.e.*, the blood becomes more concentrated. The average rise of the corpuscles and hæmoglobin is 15 per cent.; of the specific gravity, $7\frac{1}{2}$ degrees. As the digestive wave declines there is a corresponding fall in the percentages of the corpuscles, hæmoglobin, and specific gravity of the blood. The interchange of fluid between the blood and tissues measured: 15 per cent. of the volume of the plasma flows into the areolar spaces during the maximum of each lymph-wave.

There is a complete agreement between the blood-pressure and the exudation of lymph. The rate of effusion of the lymph is very rapid; fresh lymph is formed in fifteen seconds.

Lymph is disposed of in two ways: by absorption into the capillaries, and by transmission along the lymphatics. The to-and-fro transfers of fluid from the capillary to the lymph-spaces constitute a circulation sufficient for the requirements of metabolism. This may be termed the "intermediary circulation." This intermediary circulation provides the mechanism for the supply of pabulum to the tissues and for the

removal of soluble waste-products. G. Oliver (Lancet, October 3, 1903).

MENTAL DISEASES, EARLY DIAGNOSIS OF.

The writer defined insanity as "a prolonged departure from the individual's normal standard of thinking, feeling, and acting," saying that this would, for working purposes, be found sufficient. A comprehensive definition would include mental defect of whatever cause and mental perturbation of whatever degree.

Any or all of the elemental processes of sensation, perception, ideation, reasoning, judgment, memory, may be impaired in insanity. In the paper the nature and degree of impairment of these elemental processes and of emotion and volition, in different forms of insanity, were touched upon. Subjects discussed at greater length were the distinction between confirmed inebriety and true insanity of alcoholic origin, the differential diagnosis of alcoholic pseudoparesis and parietic dementia, certain phases of hysteria, and the diagnostic difficulties pertaining to paranoia and recurrent mania. Neurasthenia was a euphemism often employed to obviate the necessity of plain speaking, or might be used erroneously to explain the symptoms in the early stages of an organic malady.

The self-deception on the part of the physician or his inaccuracy in diagnosis led to improper methods of management, and the prescription of travel often made for such patients was deplored, and incidentally hospital care for neurasthenic cases was advised. C. B. Burr (Mississippi Valley Medical Association; Medical News, October 24, 1903).

MIDDLE-EAR SUPPURATION, CHRONIC.

In all cases of persistent and profuse aural discharge the radical operation is the operation of election. In cases of recurrent aural discharge, associated with lesions of the upper air-tract, this tract should first be put in a normal condition. In cases of persistent, but slight, discharge from the ear, the operator may advise the removal of the carious ossicles, together with thorough curettement of the middle ear through the external auditory meatus. It should always be explained to the patient, however, that this operation is a tentative one, and that the more radical procedure may be necessary later. E. B. Dench (Medical News, October 17, 1903).

MILK-SUPPLY REGULATION.

The writer gave the experience of Rochester in obtaining a wholesome milk-supply. He said that in this twentieth century there are schools for everything except parents. The management of children is the most important factor for the health of the next generation. Provision of impure milk is worse than any other form of neglect for children. Adults may take milk from dirty barn-yards and yet survive. There may even remain the false notion that pasteurization purifies milk. Infants do not thrive on milk that contains more than 100,000 bacteria to the cubic millimeter, and it would be still better if the number were under 10,000. In Rochester it has been found that insistence upon the bacterial standard, though this has been considered impracticable by milk inspectors in neighboring towns, constitutes the most effective way of regulating the milk-supply.

Before 1900 the average number of bacteria found in the cubic millimeter of Rochester milk was over 800,000. Twenty-six samples examined contained over 5,000,000 bacteria to the cubic millimeter. During the five years, from 1897 to 1902, 1600 less deaths took place.

The death-rate of children under 5 years of age, in Rochester, as compared with the mortality at the same ages in other cities of New York State, shows how much has been accomplished. In New York City 37 per cent. of the total mortality is of infants under 5 years of age; in Brooklyn, 36 per cent.; in Long Island City about 30 per cent.; in Yonkers, 26 per cent.; in Albany, 22 per cent.; in Troy, 23 per cent.; while in Rochester only 19 per cent. of the total mortality is of children under 5 years of age. These figures represent a decline of mortality of nearly 10 per cent. during the years when milk inspection has been insisted upon. This large reduction in the mortality of children has been brought about at a cost of less than \$900 per year. The two important elements in the crusade against bad milk have been direct stable inspection of farms and dairy-yards, and the insistence upon a bacterial standard as the criterion for purity of milk. G. W. Goler (New York State Medical Association; Medical News, October 24, 1903).

NASAL DEFORMITIES, PARAFFIN IN.

Corning was the first to use solidifying oils in surgery. Gersuny was the first to recommend and to use paraffin subcutaneously as a prosthetic measure. The use of paraffin as a prosthetic substance is still in an experimental stage. The field of usefulness of paraffin

subcutaneously in other than nasal deformities is rapidly increasing. Prosthetic operations, undertaken solely for cosmetic effect, should be absolutely harmless. All cases, regardless of the termination, should be reported, as it is only by a study of a large number of cases that the legitimate place of this method in surgery can be ascertained. The special syringe, with screw pressure, is almost indispensable. A general anæsthetic is rarely, if ever, indicated. The needle may be made to enter at either the base or the tip of the nose. Rather inject too little than too large an amount of paraffin. In a series of six cases, but one of the numerous objections was encountered, and that, a redness of the skin remaining permanently after the injection. F. G. Connell (*Journal of the American Medical Association*, September 26, 1903).

NEWBORN, TREATMENT OF APPARENT DEATH OF.

The attempts to apply the inhalation of oxygen as a therapeutic measure have not been very satisfactory as a general thing, but there is one condition in which it is proving extremely valuable. This is in severe asphyxia neonatorum. The almost invariable success and the rapidity of its action, with no inconveniences, render it a most valuable aid in this emergency. The writer uses a thin-walled rubber bulb filled from a small portable tank of compressed oxygen. The oxygen is forced through a tracheal catheter into the infant's lungs by gentle, regular pressure on the bulb. When the lungs have become distended he applies gentle external pressure to the thorax. The air escapes along the outside of the catheter, which must be of small diameter to allow this. The lungs

are then inflated again by gentle pressure on the bulb and emptied as before, and these procedures are repeated continuously as long as required. The prompt reddening of the skin shows the favorable action of the oxygen. It can be applied while the infant is in a warm bath. The narcosis from carbon dioxide is dispelled in this way more rapidly than by any other means and the stimuli applied becomes more promptly effectual. W. Zangemeister (*Journal of the American Medical Association*; from *Centralblatt für Gynäkologie*, vol. xxvii, No. 39, 1903).

OVARIAN GRAFTING.

Dr. Robert T. Morris, of New York, detailed some experimental work in connection with this subject. His results showed that an ovary grafted from one patient into the same patient had a tendency to retain its character as an ovary, to continue to furnish ova, to continue to furnish its internal secretion, and to carry on the function of an ovary, no matter at what period it was transplanted into the host, but preferably at some point near the place at which the ovary formerly grew. An ovary transplanted from one patient into another had a tendency to degenerate, and did degenerate. One could not make an ovarian graft practically from one patient into another at the present time, because the graft was absorbed. The tissues of one patient were destructive to those of another. The ovary underwent fatty degeneration or absorption, and this was the line of experimentation upon which he and his assistants were at work now. By making one series of rabbits immune from the serum, and by making another series of rabbits immune from extracts of rab-

bits, absorption or fatty degeneration of the graft from one patient to another might be prevented. At the present time he had reached this point in the practical use of ovarian grafting: 1. If, in a case of pyosalpinx, the ovaries and oviducts had to be removed *en masse*, the patient would suffer from a precipitate menopause, if she was left without an ovary. If a piece of ovary from this patient, or a piece of ovary removed from another patient operated upon at the same time, be taken and put in a salt solution at a temperature of 100° F., and then be ingrafted into the broad ligament of the patient who had lost her ovaries and oviducts, it avoided a precipitate menopause. That patient would continue therefore to menstruate. She would continue to have the comfort that goes with the possession of an ovary. But, if an ovary be grafted from another patient, at the end of the year, perhaps, the grafted ovary will have practically disappeared and her menopause begin. If a woman be grafted with a piece of her own ovary, the menopause might not begin for some years afterward, or until the normal time for it. This was a practical point, he said, which surgeons could apply in their everyday work. 2. A patient grafted with a piece of her own ovary might become pregnant, if a tube and oviduct on one side were left, or part of the tube on one side. A patient grafted with a piece of an ovary from another patient might become pregnant, if pregnancy occurred quickly. This had occurred twice with rabbits during his experimentation. But pregnancy must occur before degeneration has gone to such a point that the ova are not well formed. We must not expect pregnancy to occur as late in graft-

ing an ovary from another patient. We might expect it after grafting a patient with a piece of her own ovary. There were many cases in which the ovaries must be sacrificed in which part of a tube or an entire oviduct on one side could be saved. This was another point of practical importance. Pregnancy might be expected to occur in a small proportion of cases. He expected to obtain further good results. He was hopeful. Thus far it was known that a precipitate menopause could be prevented. Furthermore, the internal secretion of the ovary of a patient could be retained.

Dr. John B. Murphy would like to know how Dr. Morris transplanted this kind of ovary. In January or February of this year he removed one ovary in connection with a fibroid tumor and transplanted the ovary into a monkey. He split the ovary, transplanted half of it subperitoneally and the remaining half intraperitoneally. He removed it thirty-two days afterward, and sent it to the pathologist, without any statement as to what was done, and asked him for an opinion as to the condition of the ovary. The pathologist reported that the ovary was absolutely normal in every respect.

Dr. Herman E. Hayd said that if the processes of ovulation and menstruation would go on whether an ovary be transplanted intraperitoneally or extraperitoneally, there would be infinitely less danger if the piece of ovary was transplanted into the abdominal wall. In other words, one need not worry about his technique if menstruation would go on just the same.

Dr. Murphy said the transplantation of an ovary intraperitoneally was fatal. He asked Dr. Morris what he did, as it was well known that the peritoneum

would eat rapidly everything brought in contact with it.

Dr. Albert Goldspohn said that he had not utilized ovarian tissue that had been completely severed from its original connection, fearing that it might seriously interfere with function. That ovarian tissue would do good otherwise, so far as establishing secretory function was concerned, was proven by experiments made by a German whose name he could not remember. He recalled two instances. In one case there was only a slight vestige of an ovary. It looked like a mass of denuded raw connective tissue, although there was ovarian tissue in it. The remnants were connected with a little bit of connective tissue. In another instance there was more connective tissue. He swung the ovary around to the nearest accessible healthy peritoneal surface in the two cases and stitched it with fine catgut, and said that both of the women menstruated: one for two months after abdominal section, and the other had menstruated regularly since. She was enjoying very good health. So far as the sexual appetite was concerned, there seemed to be no difference.

Dr. James F. Baldwin said that if one was transplanting an ovary for the purpose of preventing the ill effects of the menopause, and not with the idea of future pregnancy, this being of minor importance, why may he not, in a patient who has been operated on several months before, make an incision down to the peritoneum, make a little pocket, and drop in the healthy ovary from patient No. 2, and close the incision? In cases in which an ovary had been imbedded in the densest adhesions in the pelvis, the women had gone on menstruating, but had not conceived; yet it seemed to him entirely unlikely that

the ovaries had anything to do with the peritoneal cavity, except with the idea of pregnancy, not with the idea of continuing their function and preventing the menopause and nervous symptoms.

Dr. Morris, in closing the discussion, said that an ovary that had been grafted might be found perfectly normal at the end of thirty-one days, at the end of ninety days, or even at the end of six months or a year. On the other hand, an ovary that had been grafted from one patient into another would not be found to be normal at the end of that period. In a series of rabbits operated on something over a year ago, in every one he found ovarian tissue at the end of twelve months. He found the ovary still perfectly normal when the rabbits were grafted with pieces of their own ovaries. The corpus luteum was an organ having a special function. It controlled menstruation. So long as a corpus luteum was formed in a grafted ovary, the patient would menstruate. When a corpus luteum was not developed, then the patient ceased to menstruate. He said it was necessary to get lymph-circulation in order to keep the ovary alive. Were it not for this lymph-circulation the ovary would become absorbed, because the peritoneum would digest beefsteak. The ovary must receive a lymph-supply. In a few days there were capillaries and a complete ovarian circulation. He had seen good-sized arteries surrounding a grafted ovary, but not actually in it. He had not noticed infection in any of the rabbits that he had experimented on. As to bringing back menstruation when it had disappeared, he mentioned the case of a nurse who had had her ovaries removed two years previously. She had ceased menstruating. He brought back menstruation in her case so that she men-

struated regularly for several months. One young woman with an infantile uterus, after receiving an ovarian graft, menstruated for a year. The graft then became absorbed, since which time she had ceased menstruating. This was a new line of work, and while there might be some disappointment, practical points were being brought out that were going to be of great value to the profession. (American Association of Obstetricians and Gynecologists; Medical News, October 10, 1903).

PELVIC AND ABDOMINAL OPERATIONS ANALYSIS OF COMMON CAUSES OF DEATH FOLLOWING.

The writer said that he had selected this topic, not because he had had a high mortality, but for the reason that it was one of great interest to the members. He said he had written several papers on postoperative complications and several upon repeated operations in incomplete abdominal procedures. This was the class of cases that perplexed him more and more as he grew older, and gave him the only mortality he met with nowadays. Recently he had had a number of trying and sad experiences. In one case a patient came from a prominent hospital after a very simple, but incomplete, operation, where the operator had only partially removed one diseased ovary and tube, leaving the organs on the other side in a badly diseased state. She was sent to him some four months following this incomplete procedure, emaciated, septic, and suffering acutely. He opened the abdomen and found a strongly adherent bowel and omentum. The consolidation of everything made him very suspicious of what he would find below. The viscera freed, he found a huge four-foot gauze towel in front of the uterus, the towel and

pus pushing the uterus well back. The stench contaminated the hospital in a few seconds. This patient lived but a few hours, her death being the only one in the hospital in a long series, greatly distressing the operator, nurses, and all concerned. Postoperative sequelæ and deaths from gauze were very common. He was satisfied that they were thrice more common than from sponges. For a number of years he had used sponges and valued them for clean work, for packing, or for a dry operation, and he believed the viscera troubled him less than at the present time. He had then been wholly ignorant of postoperative sepsis in his own work and in that of his pupils. Had he now the time to take care of his sponges, he would go back to them, highly as he valued gauze. To his mind it was one of the most valuable materials in surgery. He spoke of the value of good nursing in the reduction of mortality rate.

A number of good operators attributed their low mortality wholly to the use of gloves. One very scientific teacher had asked him, before putting on gloves, if he did not think 12 to 15 per cent. was a low mortality, taking the cases as they came. He replied: "No; too high." After adopting the gloves he had reduced his death-rate to about *nil*, but his precautions were all redoubled. For example: After operating in a septic case, other operations were postponed for thirty-six to forty-eight hours. Again, in a study of the complications and pathology, in his reported cases, the writer failed to find one in which the patient could have died from good surgery.

Recently a brilliant young surgeon had assisted him in an operation for acute gangrenous and perforative appendicitis, with general septic perito-

nitis, the peritoneum charged with and bathed in septic fluid. This patient got a wash toilet and a coffee-dam drain; she never had a bad symptom. The young surgeon remarked that about all these patients died in his hands. In a splendidly appointed hospital, with which this young surgeon was connected, the mortality was high in appendicitis operations. His reasons for alluding so fully to this subject were that the disease was so common and the death-rate so high.

Vaginal incisions and perforations favored a high mortality in later operations, done for the clean removal of the remaining diseased pelvic contents. Puriform tubes and ovaries, suppurating tubes, and ectopic gestation seldom allowed of sufficient improvement in vital force and stamina to bear well the complete operation—suprapubic—after they had been incised through the vagina. Primarily they would all have been easy by complete methods, and without mortality. The choice of method and material was of paramount importance to good work, and the suprapubic procedures, when complete and done early, drainage used when necessary, should, like the infrapubic, when done by one of the finished operators, like Jacobs, Ségond, or Pryor, give a mortality close to *nil*. He had done a large number of vaginal hysterectomies for malignancy of the uterus, cervix, or fundus, and for small fibroids, without a death, and it was one of the easiest operations he was asked to do. In suppurative forms of tubal and ovarian disease he did not consider the vaginal route adequate, because the adherent omentum and bowel and the diseased appendix were wholly neglected. Joseph Price (American Association of Obstetricians and Gynecolo-

gists; New York Medical Journal and Philadelphia Medical Journal, October 10, 1903).

PELVIC DISEASES IN YOUNG GIRLS.

All cases, whether in young girls or in older women, in which menstrual, intermenstrual, or premenstrual pain is a prominent symptom should be subjected to careful and thorough examination to determine its cause. No leucorrhœa should be permitted to pass unnoticed or treated by such "slipshod" methods as ordering a douche, giving medicine, etc., without first ascertaining its cause. In all cases where discharge is purulent a microscopical examination should be made to determine presence or absence of gonococci, tubercle bacilli, or other important septic organisms. All cases of excessive flowing, intermenstrual hæmorrhage, or prolonged menstruation should be thoroughly examined. In all cases where amenorrhœa exists every effort should be made to find the cause. In young girls subjects of neurotic symptoms which develop at puberty or occur with each menstrual epoch, a careful and thorough examination of the pelvis will often reveal the cause. If menstrual pain, irregularity, leucorrhœa, and neurotic disturbances follow the exanthemata, a pelvic examination is imperatively demanded. In all virgins the recto-bimanual examination should be used—the vaginal touch only being used when absolutely necessary. F. F. Lawrence (Journal of the American Medical Association, October 17, 1903).

PERITONITIS, BLOOD-PRESSURE IN.

Patients with general or rapidly spreading peritonitis have constantly, at least in the early period, abnormally high blood-pressures. In perforative

peritonitis a sharp rise in blood-pressure may precede the onset of other symptoms. In doubtful cases, where perforative peritonitis is suspected, and the general previous blood-pressure level is known, the course of the blood-pressure after the onset of grave symptoms should receive consideration in determining the propriety of operation. J. B. Briggs (Boston Medical and Surgical Journal, September 24, 1903).

PERITYPHLITIS, LEUCOCYTE-COUNT IN.

In catarrhal appendicitis with sero-fibrinous exudate, or in empyema of the appendix, there is a leucocytosis during the first two or three days which generally remains below 20,000, but in case of empyema may reach 28,000. After the onset the number of leucocytes drops parallel with the temperature. During the interval there is no leucocytosis. In circumscribed suppurative peritonitis, the figures at first lie between 20,000 and 30,000, and drop during the next five or six days to 10,000 or 15,000. If the abscess undergoes absorption these figures persist; if, however, the abscess grows, a rise up to 20,000 and more is noticed. In purulent peritonitis with insufficient encapsulation the leucocytosis is also high during the first days, but there will soon be a fall to from 15,000 to 20,000 despite the persistence of severe clinical symptoms. In acutely progressive peritonitis as many as 20,000 to 30,000 cells are counted during the first twenty-four hours. Still higher figures are obtained up to the fourth day, after which there is a fall to 10,000 or less. Patients with high leucocytosis generally give a favorable prognosis, those with low figures usually die. Counts after operation are valuable for the detection of secondary abscesses or iliac. On the whole, the

writer thinks that, combined with the clinical symptoms, the blood-count is most valuable to determine the true pathological lesion. Federman (German Surgical Society; Medical News, October 17, 1903).

PHTHISIS, BLOOD-PRESSURE IN.

The writer reviews the literature relating to the blood-pressure in cases of phthisis, adding his own observations. It is usually stated that the blood-pressure in phthisis is low, but statistics bearing on the point are seldom given. Marfan investigated 100 cases, and found the blood-pressure always low except in 3 cases complicated by arteriosclerosis. Hensen found in 12 early cases of phthisis that the pressure was between 105 and 150 millimeters, with a decided tendency toward the lower limit. In 20 severe cases he found an average pressure of 115 millimeters. Reynaud states that, "speaking generally, low tension of different degrees exists in all cases of tuberculous infection," and he attaches so much weight to the blood-pressure as to make it an important diagnostic sign in doubtful cases. Potain also states that the tension is low in all stages of pulmonary tuberculosis. Burekhardt, examining minutely 9 cases in the first stage of phthisis, 6 in the second, and 5 in the third, found the blood-pressure normal in the first and second stages and 20 millimeters below normal in the third stage. John found that in 35 patients with early phthisis the blood-pressure varied between 90 and 100 millimeters. He considered the pressure to be independent of methods of treatment and unaffected by the presence or absence of fever, but found the rise and fall of blood-pressure go hand in hand with improvement and deterioration in the

general condition. He therefore attaches great prognostic value to the blood-pressure. The writer's own investigations relate to 100 cases in all stages of the disease. In every case the urine was free from albumin and sugar. He used Gaertner's apparatus, and satisfied himself to begin with, by a large number of control experiments, that in healthy people the blood-pressure varied between 115 and 130 millimeters. Of his 100 cases of phthisis, 13 had blood-pressure within these limits, 18 had lower blood-pressure, and 69 had higher blood-pressure. His results are therefore diametrically opposed to those of the French writers mentioned above, approximating more nearly to those obtained by Burekhardt. Of these 69 patients with high blood-pressures, 28 were in the first stages, 22 in the second, and 19 in the third. The author explains, however, that most of his patients in the third stage were free from active symptoms, though they still showed physical signs of disease. Probably Burekhardt's third-stage cases were observed while the disease was actively progressing. The division of the cases into first, second, and third stages is probably not calculated to throw light on the point here in question. Such a division is purely anatomical, and neglects the influence of soil. The writer also states that the blood-pressure gives no valuable prognostic indications, but he thinks it possible that it may furnish a subsidiary means of distinguishing between cases which are or are not suitable for sanatorium treatment. The after-history of cases admitted into sanatoria, as compared with that of cases refused admission, shows that some fresh means of distinction is needed. It is natural to inquire whether hæmoptysis depends directly on blood-pressure. The author

puts aside the suggestion that there are seasonal variations in hæmoptysis and the further suggestion that it is dependent on body-weight. He states that where hæmoptysis is a marked feature of the case the patient's condition is often fairly good; and that, in the cases where poisoning by the products of the tubercle bacillus or other secondary bacilli is well marked from the first, hæmoptysis is usually slight or absent. In his own 100 cases previously referred to, hæmoptysis was most common in the first stage and in cases with a high blood-pressure, but he does not regard the high blood-pressure as the direct cause of the hæmoptysis. Probably the strict localization of tuberculous lesions prevents the absorption of large quantities of toxins, but is attended by increased risk of injury to the vessel-walls in the lung-tissue. Hans Naumann (*Brit. Med. Jour.*, Oct. 17, 1903; from *Zeit. f. Tuberk. u. Heilst.*, 1903).

PHTHISIS, HÆMOPTYSIS IN.

H. Cybulski (*Zeit. für Tuberk. und Heilst.*, Bd. iv, Hft. 4) in discussing hæmoptysis in phthisis deals first with the premonitory symptoms. A feeling of oppression in the chest often warns a patient half an hour or an hour before the appearance of blood that an attack is imminent. Such a premonition is specially characteristic of a small hæmorrhage, and is explained by the hypothesis that bleeding has already commenced, but that the blood is not expelled until it reaches the neighborhood of the vocal cords. The sense of oppression is not felt or felt for a few minutes only before a large hæmorrhage in which the blood quickly reaches the larynx. A second premonitory symptom is sharp pleuritic pain, caused by inflammation of the pleura covering a

portion of lung attacked by a rapidly destructive process. If the part of the lung attacked is not near the surface, a rise of temperature may be the only premonitory sign. In estimating the amount of blood lost it is to be remembered that the actual quantity is always in excess of the amount coughed up. Much blood is often swallowed, as in a case described in which the stomach of the patient who died after an attack was found to be full of blood, or in another in which an hour after coughing up 100 cubic centimeters of blood the patient vomited 250 cubic centimeters of a fluid chiefly composed of blood. The presence of blood in the sputum for some time after an attack of hæmoptysis proves that some blood remains extravasated in the lung-tissue and some also remains in the naso-pharynx and the nose. A large flow of blood is usually held to denote a cavity, but other points characteristic of a cavity may be mentioned. One is the presence of blood in the sputum for several days after the hæmoptysis, the blood being usually black and intimately mingled with the sputum. The case of a patient presenting none of the signs of a cavity, who lost 100 cubic centimeters of blood at midday, but whose sputum was no longer blood-stained by 6 o'clock the same evening, shows how quickly the blood disappears where no cavity exists. When at the beginning of a hæmorrhage the blood is dark and partially clotted, and it later becomes bright red and fluid, the presence of a cavity is also suggested. No constant temperature changes accompany hæmoptysis. Sometimes, even with profuse hæmorrhage, little change of temperature is found. In a majority of cases, however, there is a rise of temperature almost immediately after the attack, although in a

few there may be a fall. The effect of hæmoptysis on the course of the disease is of interest. It occasionally appears to exert a favorable influence. Thus a patient suffering from chronic phthisis, who had on a previous occasion been treated at the sanatorium with little effect, during his second stay there had an attack of hæmoptysis, and immediately after it began to improve steadily, both as regarded general condition and physical signs. In the most chronic cases hæmoptysis appears to have little effect, but in the great majority of the other cases it is harmful. Constitutionally the loss of blood is not beneficial, while the increase of temperature and the psychical effect on the patient are harmful. Hæmoptysis may also prove the starting-point of an attack of general tuberculosis. Locally the blood may carry tubercle bacilli to parts of the lung not previously infected, and at the site of the hæmorrhage the clot left forms a suitable nutritive medium for the bacilli. (*British Medical Journal*, September 26, 1903.)

PLACENTA PRÆVIA.

Cæsarean section should be performed in cases of (1) complete prævia; (2) prævia in primipara in the absence of severe hæmorrhage or rigid os; (3) when there is a history of previous operative delivery; (4) it should be considered in all cases where version is indicated, if a reasonably skilled surgeon is available besides an ordinary obstetrician; (5) all these indications are based on a probable viable child—twenty-eight weeks of gestation and upward. Finally, it is urged that (*a*) the operations should be performed through the left rectus muscle; (*b*) incision of the uterus is not usually followed by hæmorrhage, even when the broad liga-

ments are not constricted; (*c*) time should be allowed for contraction and retraction of the uterine fibers before the placenta is removed; (*d*) if sufficient time is allowed for this to take place, no blood will be lost from the beginning to the end of the operation, and, if severe hæmorrhage has preceded operation, the abdomen can be filled with saline solution before it is closed; (*e*) the shock of such an operation is certainly not greater than that of version or forceps in a woman already exhausted; and (*f*) within a few minutes of starting the indications of treatment (empty the uterus and control hæmorrhage) will have been fulfilled. F. D. Donoghue (*Annals of Gynecology and Pediatrics*, August, 1903).

POSTPARTUM INFECTIONS OF THE UTERUS, THE RATIONAL TREATMENT OF.

Dr. D. Tod Gilliam, of Columbus, Ohio, said the rational treatment of postpartum infections of the uterus presupposed a knowledge of the infecting agencies, their nature and tendencies, and of the conditions which favored or retarded their entrance into the general system. The bacteria of puerperal infection were the same that took part in other pathological processes of the genital tract, chief among which were the streptococcus, gonococcus, colon bacillus, and the saprophytes. Saprophytic or putrid infection occurred when fetal *détritus*—fragments of placenta or membranes—had been left in the uterine cavity. It was pernicious only through its products, the toxins, and would cease to do harm so soon as the fetal *détritus* was expelled from the uterine cavity. Both the colon bacillus and the gonococcus were surface germs showing little tendency to penetrate into the depth

of tissues or to disseminate through the general system.

The streptococcus was the most deadly of germs connected with puerperal infection. It might and did proliferate in living tissues. While all of the germs were capable of producing invalidism, there was only one—namely, the streptococcus—that jeopardized life. This assertion was to be taken in a general sense, as other bacteria had on occasions been the cause of severe or even fatal infection. It became, then, important to distinguish between streptococcal infection and that of other germs. Unfortunately, there was no sure method, even the microscope at times being inefficient or misleading. Clinically, putrid infection was usually characterized by high temperature, slow pulse, and foul odor, whereas in streptococcal infection there was no odor in the earlier stages, and the pulse was markedly accelerated. There might be suppression of lochia. The normal death-rate for puerperal infection was about 1 per cent. This was increased in epidemics, which were usually due to streptococcal infection. The death-rate from streptococcal infection was about 5 per cent., and these constituted about one-fourth of all cases of puerperal infection. Hence, about 98 or 99 cases out of a hundred should recover, if let alone. A recently delivered uterus was a hotbed for infection, being filled with the juices of disintegration and spilled blood. The mortality would be appalling were it not for the safeguards. These were: (1) autosterilization of the genital tract; (2) the protective epithelium; (3) the protective leucocytes under the epithelium. The germ of Döderlein was the principal agent in sterilizing the genital tract; hence irrigation before or after labor was harmful, be-

cause it washed this germ away and did not entirely rid the tract of pathogenic germs. It was impracticable to clear the uterine cavity of pathogenic germs by curettage or flushing, as many of the germs were ensconced in the depths of the utricular glands, and could not be reached; hence curettage or flushing by opening avenues of infection without getting rid of the pathogenic germs was harmful and dangerous. The epithelium was usually an efficient preventive of germ invasion. The protective leucocytes under the epithelium gave battle to the germs, and unless overwhelmed would prevent their entrance into the general circulation. The normal death-rate of puerperal infection was about 1 per cent., but after curettage it amounted to 20 per cent. The sharp curette was especially dangerous, as it not only failed to remove the germs, but destroyed the protective barriers. As it was impossible to say that streptococcal infection was not present in any case, the only safe way was to eschew the sharp curette entirely in puerperal infection. Curettage was only permissible where there was known to be foetal debris in the uterine cavity, and where there was reason to believe no streptococci were present. For this the finger or dull curette with stiff handle should be used. Flushing, if done at all, should be done with every precaution against infection. The patient should be on a table, under a good light, the vulva and vagina cleansed, the latter with 5-per-cent. creolin in liquid green soap, mopped, dried, and retractor introduced; the cervix grasped, drawn down, and steadied with forceps; the cervical canal wiped out with gauze and bits of membrane picked off with forceps. Gently introduce irrigator and flush. If pulse and temperature should

drop, repeat daily or oftener, otherwise discontinue. Alcohol might be instilled according to Ill's modification of Carosso's method. (American Association of Obstetricians and Gynecologists; Medical News, October 10, 1903.)

PROSTATE, CANCER OF THE.

The writer considers the treatment under three divisions: preventive, palliative, and curative.

Preventive.—The ultimate analysis of the question of preventive treatment seems to lead to the conclusion that, if gonorrhoeal infection could be prevented in the first place, the occurrence of cancer of the prostate would become much less frequent, for it is now well established that chronic posterior urethritis is a very frequent complication of acute urethritis. More and more evidence is being brought out to demonstrate that chronic posterior urethritis and chronic prostatitis go hand in hand, that the latter plays a causative part in the formation of the so-called prostatic hypertrophy, and that this in turn, reasoning from analogy, plays a part in the frequency of the formation of cancer. It would seem evident, also, that a more prolonged and careful treatment of chronic posterior urethritis and prostatitis than has generally been the custom would tend to prevent the so-called hypertrophy and the cancer secondary thereto.

Palliative.—A review of the literature on the subject shows that in the past a vast majority of cases of cancer in the prostate have been diagnosed after metastasis had already taken place and the system had become infected. Necessarily, then, operations attempted with the idea of cure have been failures. Something may be said, however, in favor of operations undertaken with the

idea of prolonging life, or more particularly in the late stages of the disease, for the relief of symptoms, particularly pain. Taillefer in one case considered the making of a permanent suprapubic opening responsible for the rapid involvement of the corpora cavernosa, while, on the other hand, Delore, in two cases, by the same operation thinks he gave relief. Desnos by resecting part of prostate in two cases gave relief from pain, apparently caused by pressure. The writer has only had as yet the opportunity to operate once; but, from a somewhat limited experience in palliative operations for tuberculosis and cancer in other parts of the genito-urinary tract, he is of the opinion that palliative operations are justifiable in prostatic carcinoma, but that they should be well thought out beforehand and not attempted if of a character to make the after-progress of the disease more distressing to the patient.

Curative.—So far, the only curative procedure at our command consists of removal of the cancerous prostate before metastasis has taken place; that it is possible to recognize it early enough to do that seems evident. R. H. Greene (New York Medical Journal and Philadelphia Medical Journal, October 24, 1903).

PUERPERAL INSANITY.

The writer believes the following classification to be the most convenient: Insanity of pregnancy, which is usually melancholia; puerperal insanity proper, which comes on in a limited period after delivery and is usually in the form of mania; and insanity of lactation, which is principally melancholia. The prognosis is favorable: 75 to 80 per cent. recover, but a large proportion die of

exhaustion. J. W. Palmer (Medical News, September 5, 1903).

PULMONARY TUBERCULOSIS. SPECIAL AIDS TO THE EARLY RECOGNITION OF.

The writer states that in making use of the tuberculin test some of the features to be remembered are: 1. The dose of tuberculin which does not produce a reaction temporarily increases the tolerance of the patient to subsequent doses; therefore, the smaller the increase in dose, the greater must be the interval between doses. 2. The smaller the dose required to produce a reaction, the more reliable the diagnosis; therefore the importance of searching for the local manifestations after all doses over 5 milligrams. 3. The salicylates, probably all the chemical antipyretics, and some other drugs interfere with the test; therefore all drugging must be omitted during the test.

The writer then reaches the following conclusions: 1. The full appreciation of the value of percussion and auscultation findings and of symptoms is dependent upon the recognition of the limitations of the significance of their presence or absence. 2. Deductions from temperature may be made from only frequent, regular observations. 3. An auscultation chart made while listening to the sounds is an essential aid to accuracy of both observation and record. 4. Negative sputum findings are never sufficient ground for negative diagnosis. 5. Blood-examinations throw no light upon diagnosis of tuberculosis in its incipency, except in excluding those conditions in which the blood-findings are characteristic. 6. Significance and reliability of agglutination are not yet fully established. 7. The tuberculin test is a safe, reliable, practical, and justifiable diag-

nostic resource in those cases in which its use is indicated; that is, in those cases of suspected early tuberculosis in which all other means have failed to clear up the diagnosis. When a positive diagnosis can be made without the tuberculin test, its use is to be condemned as a meddlesome procedure. W. L. Dunn (*American Medicine*, October 17, 1903).

RADIUM IN MEDICINE.

The discovery of radium may make it necessary to change our theories of the old hypothesis about matter and the conservation of energy. It may possibly open up the way for a cheaper and more wholesome lighting of houses by phosphorescence. It is a practical agent to differentiate genuine gems from artificial. It is a useful agent to kill bacteria. It may be considered a valuable agent for the treatment of lupus, cancer, and tuberculosis; and a possible agent to improve the eyesight and overcome partial blindness. No doubt, later discoveries will show it to be of service in other diseased conditions. S. G. Tracy (*New York Medical Journal and Philadelphia Medical Journal*, October 24, 1903).

RECTUM, CANCER OF THE.

There are only two methods of treating cancer of the rectum in vogue: Inguinal colostomy and extirpation of the growth. When an artificial inguinal anus is made, death is, of course, inevitable. The question for the surgeon must be: Is it justifiable thus to cut off the patient from all hope? Records of 43 excisions show that the making of an artificial anus is scarcely justifiable, since so many patients not only are given relief by extirpation, but live for many years, and so many of them seem

to be radically cured. This teaching is all the more important now that cancer is evidently on the increase, and since all the other methods of treatment—the x-rays, the Finsen light, and various forms of serum-therapy—have all failed and are proven inapplicable to rectal carcinoma.

The disease is always unnecessarily fatal, unless radical operation can be done. The usual length of life is about nine months. This is true with or without colostomy, and it is doubtful if colostomy gives much relief. Patients on whom no operation is done seem to live quite as long, and, under opium, have not much more pain. In these cases the patient's condition always becomes so pitiable toward the end that death is welcomed as a relief. Even the saving of one patient then would justify surgical interference, and, if such interference also brings hope of relief from pain and death without the needless agony of gradual invasions of all the perineal tissues, the surgeon is doubly justified. One thing is certain: no method except extirpation has ever cured a rectal carcinoma. Life, after extirpation, is always from three to six months longer.

There are only two indications for colostomy. One is scirrhus carcinoma of the rectum, with complete closure of the caliber of the gut, because of contraction; the other is extensive hæmorrhage from soft malignant tumor. In this case the inguinal colostomy gives a chance for curettage in order to put a stop to the exsanguination of the patient. Even after colostomy, it must not be forgotten that the caliber of the gut very seldom becomes completely closed, and that more or less faecal material is sure to pass through it.

The radical operation, when reasonably successful, restores the patient to

strength and usefulness, and gives immediate relief from the preceding discomfort. Out of 41 cases operated upon by the writer, 12 were unsuccessful, mainly because patients in advanced stages of the disease were operated upon at the urgent solicitation of themselves and friends. Two cases, however, operated upon when apparently in a hopeless condition, and requiring very extensive operation, have survived many years after the operation. Of the 29 patients who were discharged after extirpation, 22 can be traced. Of these, 16 have lived for more than 2 years after the operation. One patient who was presented to the Association has lived for 11 years, another for 10, a third for 7; two have lived $6\frac{1}{2}$ years, and two over 5 years since their operation. It is evident then that carcinoma of the rectum is not nearly as hopeless an affection as it has been considered.

The first reason for death after operation for cancer of the rectum is because of the late diagnosis. In three cases the neoplastic process had gone so far that nodules of cancer already existed in the liver. In one of these cases extirpation was done because the patient had insisted that he did not want to go back home with that tumor in his rectum, and would prefer to go home dead. The writer was tempted to do the operation from the consideration that removal of the rectum and sigmoid would cut off the portal blood-supply, and so starve somewhat the growths in the liver. This patient is alive—3 years after the operation. The next most frequent cause of death is sepsis. Owing to the unclean nature of the parts operated upon, infection is bound to take place occasionally, notwithstanding the surgeon's care. In one case gangrene took place, because the blood-supply to

the lower cut end of the bowel was cut off by clamping. The patient died on the third day. The writer always cuts off sufficient gut so as to get a free bleeding from the cut surface, otherwise there is danger of gangrene. He insists very much on the necessity for earlier diagnosis of cancer than is the rule at the present time, physicians evidently not making a proper examination. J. P. Tuttle (New York State Medical Association; Medical News, October 24, 1903).

RHEUMATISM, THE MICROCOCCUS OF.

The writers formulate the following provisional statement: The *micrococcus rheumaticus* produces formic acid in very considerable quantity, and also at least one other acid of the fatty acid series. The acid (formic) is not only present in the filtered cultures of the organism, but can also be extracted from the bodies of the micro-organisms themselves. The washed micrococci contain, in addition to formic acid, at least one of the higher fatty acids. Ordinary streptococci, such as streptococci isolated from a case of erysipelas, only give rise to a small amount of formic acid. This observation may constitute a means of differentiation between the rheumatic micro-organism and other members of the streptococcic group. Formic acid and probably another fatty acid are present in the urine during the course of acute rheumatism in appreciable amounts. From normal urine formic acid is either altogether absent or it occurs in traces only. Under the salicylic acid treatment of rheumatism formic acid is reduced in quantity in the urine of the patient. Formic acid is obtainable from the tissues of an animal (rabbit) suffering from acute arthritis due to the inoculation of the micro-or-

ganism. E. W. A. Walker and J. H. Ryffel (*British Medical Journal*, September 19, 1903).

ROENTGEN RAYS AND MALIGNANT DISEASE.

In superficial cancer, especially superficial epitheliomata, the x-rays have proven to be of the greatest service. Experiments with the x-rays for deeply situated cancers, however, have so far been without success. The utility of the x-rays for recurrent carcinoma is still in doubt, though nodular recurrences usually disappear promptly under exposures to the x-rays. The question whether, after operation, all patients who had been suffering from malignant disease should be treated by the x-rays is as yet open to discussion, and will require a number of observations before it can be decided. The effectiveness of the x-rays in malignant disease tempts the practitioner to their use, yet the lack of success in so many cases is discouraging. The writer has experimented with the idea of finding out whether the liberation of certain solvent substances in the tissues might not be of service in producing more lasting favorable results. The two substances that naturally come under this head are iodine and arsenic. The mere physical experiment of mixing a solution of potassium iodide with starch and exposing it to the x-rays shows that much more iodine is liberated under the influence of x-rays than in a test solution which has not been exposed to the rays. In one case of inoperable mouth carcinoma the writer tied both carotids and used the x-rays at the same time that considerable doses of potassium iodide were administered. The result was the disappearance of the cancer with no recurrence up to the present

time. A case of actinomycosis of the neck, treated with combined potassium iodide and the x-rays, also did very well. (Bevan.)

While the x-rays undoubtedly do good in certain cases, a certain reaction against the abuse of them is sure to be of benefit at this time. Experience has shown their positive value, which is superlative for superficial epithelioma and for rodent ulcer. Epitheliomata situated near the angle of the nose or close to the eye are almost sure to be followed by distressing disfigurement. No treatment succeeds so well in avoiding this as the x-rays. The mildest paste that will be efficient does not succeed nearly as well. Lee (*Medical Society of New York State; Medical News*, October 17, 1903).

ROENTGEN RAYS, DANGERS OF.

There are, in the writer's opinion, two serious dangers in the use of the x-rays. The first of these is the possibility of causing dissemination of the malignant process or even causing it at times to take on irritatively a more rapid growth than would otherwise be the case. When a malignant process has been exposed to the x-rays and has decreased in size and then takes on a new growth the surgeon may not realize how widely he must cut in order to remove all the malignant tissues. A case illustrating this has recently been under the writer's care. The patient suffering from epithelioma of the lip was treated by the x-rays and the tumor disappeared. After some months it recurred, however, and then the x-rays had no effect upon it. It now began to grow rapidly, and was almost inoperable when the man came for operation. The x-rays seem to be especially indicated for epitheliomata of the face, especially situ-

ated near the eye and the nostril, where operations are sure to prove so disfiguring. Coley (Medical Society of New York State: Medical News, October 17, 1903).

ROUND LIGAMENTS. SHORTENING OF.

"The location of the internal ring is determined by finding the point of crossing of Poupart's ligament and femoral artery, as the ring is situated immediately back and above it. Beginning half an inch inside this point and cutting toward the pubic end parallel to Poupart's ligament, a one-inch incision is made through skin, fat, and superficial fascia. Eye-retractors and blunt hooks are then used, the tissues separated down to the aponeurosis of the external oblique, which is thus laid bare to the eye, to the extent of about one square inch. A puncture is now made through this aponeurosis one-quarter of an inch long, situated just above Poupart's ligament and to the back of the square inch of cleared aponeurosis, and through this the blunt hook is inserted and the ligament drawn out, usually with more or less of the fat of the canal along with it. The ligament is isolated and its fibrous attachments stripped back toward the internal ring with blunt-pointed dressing forceps, the ligament drawn out to the necessary length, an aneurism needle passed through the aponeurosis, and the loop of ligament drawn through this, folded back on itself, and, with one stitch of kangaroo tendon, made fast, the suture embracing in its grasp the edges of the aponeurosis where the ligament first passes through it, half of the ligament at the same point and half on each side of the loop that is folded back on it. The skin is then closed by a running catgut suture, and dressings applied. The operation is applicable only

to cases of mobile uteri without diseased appendages, in which cases it is an ideal procedure, or to cases in which adhesions may have been previously broken up by abdominal section."

Of 58 cases operated on by this method, late examination has shown the uterus to be in normal position in 48: 6 other cases were normal two to five months after operation, and were then lost sight of; there was 1 partial failure and 2 complete failures. H. W. Longyear (American Association of Obstetricians and Gynecologists; Journal of the American Medical Association, October 17, 1903).

SPRUE.

The main points in the diagnosis of sprue are the following: Irregular and chronic diarrhoea, with dyspepsia, causing flatulent distension of the belly and the occurrence of fermenting offensive stools, which in chronic cases become pasty, clay-colored, and very abundant; progressive emaciation; extreme secondary anaemia; changes in the buccal mucous membrane, with or without the production of an aphthous condition; and *postmortem*, a thinning of the gut, with destruction of the mucous membrane and its absorbent glands. Two forms of the disease are generally distinguished: (1) primary, where the symptoms are insidious, commencing as ordinary diarrhoea; and (2) secondary, following after a dysenteric attack, the dysenteric processes having subsided. The author reports two cases illustrative of each class. He calls special attention to the marked anaemia, the red corpuscles being reduced to 1,000,000 per cubic millimeter. There is a well-marked reduction in the number of the leucocytes also. Poikilocytosis and schizocytosis are present, and should re-

covery take place normoblasts appear in the blood. P. W. Bassett-Smith (*British Medical Journal*, September 19, 1903).

STREPTOCOLYSIN.

Virulent streptococci, when grown in heated rabbit serum (and other sera), produce an hæmolyisin which destroys the red corpuscles of many animals. This hæmolyisin is an organic substance which is destroyed by heating to 70° C. for two hours. It gradually deteriorates if kept at room temperature, but may be preserved in the ice-chest for a much longer time. In the incubator it deteriorates very rapidly. It is destroyed by peptic digestion, and is nondialyzable. It is composed of a haptophore and a toxophore group, which are firmly bound together. The haptophore group may be neutralized with chicken serum and the toxophore group is destroyed by zinc chloride. The sera of some animals contain antistreptocolysin. A weak solution of formaldehyde has antihæmolytic properties. The filtered cultures of a virulent streptococcus, in heated serum, are toxic for rabbits. G. F. Ruediger (*Journal of the American Medical Association*, October 17, 1903).

SYPHILIS, ADRENALS IN CONGENITAL.

The writer records an autopsy on a 2-day-old syphilitic child. There was a gummatous hepatitis and an interstitial splenitis. The adrenals showed miliary gummata and larger wedge-shaped and oval necrotic foci, but no cheesy degeneration was found. The author thinks the necrosis bears a relation to the syphilis, as he has seen it in three other cases and has never observed it in fifteen other autopsies on nonsyphilitic children. N. Guleke (*New York Medical Journal and Philadelphia Med-*

ical Journal; from *Virchow's Archiv*, September 1, 1903).

SYPHILIS, COPPER IN.

The author contends that the treatment of syphilis in all its stages, inclusive of the cachectic and the parasyphilitic forms, is well founded on sulphate of copper in the average dose of $\frac{1}{30}$ grain, aided by such a quantity of blue mass as is borne readily by the patient. In old syphilis in any form the copper salt must be given in minute doses ($\frac{1}{3200}$ grain), and gradually increased as tolerance is established, until the usual dose of $\frac{1}{30}$ grain is given, when the mercurial should be added in a rather small dose. It is sometimes better, he states, to give the medicine only on alternate days. In acute syphilis the copper salt is to be given in the dose of $\frac{1}{30}$ grain, and the mercurial added at once, and increased as much as the patient will tolerate, in order that the disease shall be neutralized and eliminated as completely as possible. Iodine, iron, arsenic, and tonics of any sort, while useful, occupy a subordinate place in the treatment of syphilis. Alcohol, and especially tobacco, should be forbidden to syphilitics. An important feature of the treatment, however, is the smallness of the dose first used, namely: $\frac{1}{3200}$ grain, as stated. A. F. Price (*Medical Record*, October 10, 1903).

SYPHILIS, THE INOCULATION OF A CHIMPANZEE WITH.

At the meeting July 28th last, of the French Academy of Medicine, Messrs. Roux and Metchnikoff presented a communication concerning some experimental researches upon anthropoid apes (*Bulletin de l'Académie de Médecine*, No. 30, 1903). The most important of these investigations relates to the in-

oculation of a young female chimpanzee with syphilitic virus. Twenty-five days later this was followed by the development at the point of inoculation of an indurated sore. The development of this sore was followed in a few days by a bubo. M. Fournier, who was asked to examine these manifestations, stated his opinion that they responded in all respects to the characteristics of the chancre and the bubo as observed in man, and in this opinion he was supported by other well-known syphilographers. His lucid exposition was summed up with the phrase, *rien ne manque au tableau*—nothing is wanting to the picture. Before affirming that the important question of the possible inoculation of animals with syphilis has been definitely and affirmatively settled, he preferred at that moment, with scientific caution, to await the subsequent appearance of secondary or constitutional manifestations. This caution some of his colleagues seemed to regard as excessive, and were disposed to regard the question as already answered.

However this may be, we are now informed by a most competent witness that when he was in Paris about a month later Metchnikoff sent one of his assistants to show him the chimpanzee. At that time the primary sore was healing, but skin lesions were pointed out to our informant as beginning to appear. In conclusion, the daily press published about ten days ago a cable from Paris announcing the death of this chimpanzee, and stating that she "succumbed to the malady" induced by the inoculation. Of this last statement we await confirmation. It is also stated that five other chimpanzees are being subjected to investigations having the same object in view.

The chimpanzee is one of the most

anthropoidal, if not the most anthropoidal, of the monkeys. It is a somewhat rare and costly animal, and Messrs. Roux and Metchnikoff have been enabled to pursue these experiments by means of funds supplied through the agency of the Institute of France and the Fourteenth International Medical Congress. Similar inoculations have been attempted many times by others upon the lower orders of monkeys and upon other animals, but hitherto without definite results. The nearer relation of this particular monkey to man seems to be the qualifying difference, for the inoculations were not surrounded by any especial or exceptional precautions. One is led to conclude that the blood of the chimpanzee, from the point of view of the precipitation and agglutination of its serum, has close affinities to the blood of man.

M. Fournier sees in the success of these experiments, and in the possible inoculation of animals with syphilis, new and splendid horizons opening themselves before the syphilographer: the study and probable solution of many different problems, and among such those of therapeutics, of immunization, of vaccination. It is possible, he thinks, that we view the dawn of one of those discoveries, of which several have in the past come from the laboratory of Pasteur, which constitute at once a distinguished honor to science and a vast benefit to the human race. For the realization of such a prospect must we deplore the sacrifice of these apes! Editorial (Boston Medical and Surgical Journal, October 15, 1903).

TETANUS ANTITOXIN, THE VALUE OF.

The exact value of tetanus antitoxin is even now still *sub judice*. That it is able to neutralize the toxin if injected

before or soon after the injection of the toxin has been conclusively shown in animals. In man, however, where the experimental method of investigation is inapplicable, the only cases in which we can observe the action of the antitoxin are those in which the disease has already developed. From the knowledge we possess of the pathology of tetanus we can be quite sure that by the time symptoms of spasm become first manifest the disease has progressed so far that the antitoxin is not capable of exhibiting all its curative power. There is still much that is obscure in the pathology of tetanus, but we know that the phenomena of the disease are produced not by the direct action of the specific bacillus, but by the toxin to which this bacillus gives rise. The bacillus is confined to the wound and the toxin alone is absorbed. After absorption into the blood-stream it is carried to the central nervous system and there the greater part of the toxin enters the nerve-cells and forms a very stable compound with the cell-substance. When the antitoxin is introduced it can neutralize any "floating" toxin which is still in the circulation, but it is unable to break down the very firm union between the toxin and the cells of the central nervous system. Therefore it is clear that as soon as any spasms appear the time has gone by for the most valuable action of the antitoxin, for the action of the toxin on the nerve-cells has already commenced. It is true that the antitoxin can still render innocuous that portion of the toxin which is unfixed and any further amount of toxin which may subsequently be absorbed, but the effect already produced on the nervous system may have been sufficient to lead to a fatal issue. Without the employment of the antitoxin recovery ensues in

a certain proportion of cases of tetanus, especially when the incubation period is long—that is, over twelve or fourteen days. When a large quantity of the toxin has been absorbed the symptoms develop rapidly, and even if the antitoxin be administered early it cannot exert its beneficial action, for a large amount of toxin has already attacked the cells of the central nervous system. Thus it comes to pass that the mortality of the cases in which the antitoxin is administered early is very high. Ullrich collected 41 cases in which the antitoxin was injected within thirty hours of the commencement of symptoms and the death-rate was over 72 per cent., while in 72 cases in which the antitoxin was injected between the second and fifth days the mortality was less than 46 per cent. In spite of these statistics there is good evidence that antitoxin is of distinct value in tetanus, especially if it be administered early, and in the present issue of the *Lancet* is published an account of a case under the care of Dr. J. W. Cook at the Bury Dispensary Hospital. In this case the antitoxin was injected and improvement appeared to follow, and when the injections were omitted on one day a slight relapse occurred. The successful result was rendered more certain by the use of the antitoxin, though the patient might have recovered without it, as it was not an acute case. The employment of the antitoxin, however, should not lead us to neglect the local treatment. The bacillus lives only in the wound, where it forms toxins which are absorbed. To permit, therefore, the tetanus bacillus to continue its formation of toxin in the wound is to invite failure. The wound should be opened up and cleansed with the greatest care, all foreign bodies and necrosed tissue being removed and the

wound being rendered aseptic. By thus cutting off the supply of toxin the surgeon is better able to deal with the quantity which has been already absorbed. Editorial (*Lancet*, October 17, 1903).

TONSILS, ENLARGED.

The writer divides enlargements of the tonsils into three classes: 1. Simple enlargement, or hypertrophy of the tonsil. 2. Enlargement due to continued irritation—the most common cause being nasal insufficiency or naso-pharyngeal obstruction from adenoids in the young and enlarged turbinates, etc., in adults. 3. Enlargement accompanied by lacunar inflammation. For lacunar disease of the tonsils he recommends cauterization and describes a crypt dilator and a curette. Complete removal of the tonsils for enlargement from lacunar disease is not deemed always necessary, but it is indicated in lacunar disease in the following conditions: When the whole tonsil is extensively diseased; the fibrosis following cauterization is so widespread as to leave the tonsil in a chronically painful condition; when the crypts involved, although few in number, are at the upper part of the tonsil and open upon the mouth of a deep supratonsillar fossa (cauterization in such cases is useless); when the crypts involved occur upon a hard, anæmic, and rugose tonsil, and contain foul and cretaceous lacunar plugs; when the disease occurs in young children, who will rarely permit of any prolonged manipulation in the mouth; when the condition is accompanied by cervical glandular enlargement; where cauterization has been tried and failed. On the other hand, dilatation of the orifices, evacuation of the contents, and cauterization of the crypts are especially

indicated in cases where the crypts are neither numerous nor large, where the upper part of the tonsil is shallow, and where the disease occurs in young adults and is not of long standing. L. H. McGavin (*Lancet*, September 26, 1903).

TROPICAL MALARIA.

Destroying the mosquito larvæ over sparsely populated districts is impracticable. In dealing with malaria in a district the following points should be insisted on: 1. A prompt search for cases of fever as fast as they occur, with efficient treatment. If necessary, or otherwise practicable, malaria should be included in the list of infectious diseases whose notification to the local sanitary authority is compulsory. 2. The continued treatment of fever cases after the attack is over, to prevent relapses. The systematic treatment, especially during the nonfever season, of the cases of anæmia and other forms of debility induced by chronic malarial poisoning. The above measures represent the least that can be expected from a sanitary authority in the treatment of malaria in an infected district, and it is gratifying to observe that when such measures are effectively carried out a great deal will have been done to exterminate the disease. The surest prophylaxis consists in efficient treatment. H. M. Fernando (*British Medical Journal*, September 26, 1903).

TUBERCULOSIS, PROPHYLAXIS OF.

E. von Behring (*Berliner klinische Wochenschrift*, March 16, 1903) points out that the means of combating tuberculosis as a disease of the human race, or even of preventing it and dealing with it in individual cases, have proved up to the present inadequate, and any suggestion of a new means of prevent-

ing the disease or dealing prophylactically with unaffected persons should be welcomed. He has carried out immunizing experiments in cattle, which have led to certain results which may be of great importance for the human subject. The details of these experiments have already been published, and he refers his audience (and readers) to this article. The inoculation material is gained from an 8-year-old culture of human tubercle bacilli, which was dried at room temperature *in vacuo*, and which retains its full virulence for about four weeks in this condition. An emulsion of 0.004 gram in 4 cubic centimeters of water is injected into the neck veins of the animal to be immunized. He says that none of the many hundred animals treated in this way suffered any harm from the injections. Not infrequently, however, in cattle of about 7 months there was fever for several days and a loss of appetite. This proved to be more often the case in cattle fed on tuberculous milk than with those fed on sterile milk. Large doses produced threatening symptoms in cattle of over a year of age, and the animal was not seldom attacked with pleural effusion, and later pneumonia, from which it, however, completely recovered. The autopsy carried out after recovery did not reveal the least sign of an inflammatory condition. This oversusceptibility to the venous injections of the bacilli appears to be coincident with the power of the blood to agglutinate the bacilli and with oversusceptibility toward tuberculin. He thinks that the three factors stand in some causal relationship to one another. A marked reaction to the injection of his material may be translated into a bad prognosis in cattle of over 1 year of age. Since strong reactions only take place in ani-

mals who have been infected for some time, the injections will be proportionately safer the younger the animal, and in quite young cattle a harmful reaction should be absent. For prophylactic injections he chooses calves of between 4 weeks and 3 months. Behring considers that it will hardly be possible to treat young children by intravenous injections of live, albeit relatively weakened, tubercle virus, and he therefore suggests that one may be able to substitute an immunizing with antibodies derived from immunized animals. The chief objection to this method is that this form of immunizing only lasts for a very short time, and the tubercle bacillus is a very resistant organism. His experience, on the other hand, has led him to accept the view that the chief danger of tuberculous infection is to be sought in infantile infection. That this is so is rendered more likely by the fact that in the early weeks the intestinal mucosa does not possess a continuous layer of mucous cells, which would give a good chance for the resorption of corpuscular elements, and the antibacterial ferments have not been produced at this early time. Whether one will be able to immunize children in this way must be decided later on; but he says that he would not test it experimentally before he has assured himself that it is feasible with cattle first, and for this purpose he is now carrying out some experiments. He has caused calves to be immunized at the age of 3 weeks, and has found that the method has given very promising results so far, although he points out that one must observe the effects for some years before one can conclude that the injections are capable of keeping the destructive effects of the epizootic tuberculous infection in abeyance. He believes that it will prove to

be so: First, because a number of his immunized animals have been killed one year and a half after they had been infected with bovine tubercle bacillus, as well as been kept together with other cattle, which showed marked signs of advanced tuberculous disease, without showing the slightest signs of tuberculous changes *postmortem*. Secondly, he has received a number of reports from farm practice of the *postmortem* appearances of cattle which had been immunized by his method without a single one being tuberculous. Thirdly, three immunized animals were kept for one year in the same stalls with eleven other oxen, and were tested with tuberculin; the immunized cattle did not react, while all the others did. The difficulty of preventing an infection before the immunizing is overcome by feeding the young calves with sterile milk. Fourthly, the observations of Thomassen go to show the same kind of results. Behring says that the public appears to have obtained an entirely wrong conception of his work by means of the public press. In conclusion, he deals briefly with some of the present means of coping with tuberculosis in sanatoria, and by improved dwellings for the poor, etc., with all of which he deals openly. We must refer our readers to the original article for his remark on the last-named points. (British Medical Journal, October 10, 1903.)

TUBES. OPERATIONS ON.

Hysterosalpingostomy is an anastomosis between the uterus and the proximal cut end of a remaining portion of a Fallopian tube that has had its obstructed proximal end, along with the horn of the uterus on the same side, excised.

In order that this operation may be performed as aseptically as possible, the author first cleanses the utero-vaginal

mucous membrane, using pure lysol to the inside of the uterus, after dilatation and curetting. Any operations indicated on the cervix, vagina, or perineum are not performed until the more important work within the abdomen is done first. Vaginal section is not at all suitable for the execution of hysterosalpingostomy, salpingostomy, bisection of ovaries, appendicectomy, etc. It is necessary to enter the abdominal cavity suprapubically, in order properly to expose, examine, and conserve chronically inflamed and partially destroyed Fallopian tubes and ovaries.

The principal indication for hysterosalpingostomy is obstruction of the proximal end of the Fallopian tube, which may be due to chronic inflammation or a myoma. The age of the patient must be considered. She must be still menstruating. Even women nearing the menopause should be allowed to retain the power to become pregnant. The operation is suitable in cases of hydrosalpinx, cases where the fimbriated end is pervious and proximal end closed, and chronic pyosalpinx when the contents of the tube are sterile. There would be no object in performing this operation when both ovaries are destroyed by disease, as, for instance, in multiple abscesses of them, or when they should be removed for some other cause.

The operation is performed as follows: "Determine that the tube is obstructed at its proximal end by inability to pass a probe or to force air through it. Then remove the obstructed portion, including the horn of the uterus down to the uterine mucous membrane, care being taken not to interfere with the vessels immediately below the Fallopian tube. Split the proximal end of the remaining portion of the tube about half an inch. Pass a mattress suture through

the uterine wall from the serous to the edge of mucous surface, continue it through one-half of the split proximal end of the tube from serous to mucous to serous surface of uterine wall. Deal in a similar manner with the other half of the split end from the opposite surface of the uterine wall.

"Traction is now to be made on these two mattress sutures, and the Fallopian tube is thus drawn into the wound in the uterus, its mucous membrane becoming continuous with that of the uterus, and its serous surface coming in contact with the raw uterine tissue on both sides. The sutures are then tied. Pass two or three interrupted sutures above and internal to the tube to close the wound in the uterus, care being taken not to constrict the Fallopian tube. The stitch next the tube must grasp its outer coats, so as to secure more firmly its position. All sutures are made with chromicized catgut, No. 0.

"It will thus be seen that a probe passes readily through the Fallopian tube into the uterine cavity. The tube rests at the lower and outer angle of the wound, and every facility is afforded for its fixation and permanent patency."

Salpingostomy.—The operator should determine, by inability to pass a probe or to force air into the tube, that the tube is obstructed. This being the case, he should remove the obstruction together with the distal end of the tube. This is best done diagonally across the tube from above downward and outward, leaving a projecting mucous membrane and as large an opening as possible. Chromicized catgut No. 0 is used as suture material. On the superior surface of the tube a suture is passed through the serosa a short distance from its free edge and continued through the mucous coat close to its edge. Similar sutures

are passed on the inferior and lateral surfaces sufficient to insure a perfect union of the mucous surface. A probe can be readily passed through the opening into the tube and the uterine cavity. A. H. Ferguson (New York Medical Journal and Philadelphia Medical Journal, October 24, 1903).

TYPHOID FEVER.

The general practitioner must feel impelled to call a surgeon to his aid in almost any case of typhoid, not necessarily for operation, but for consultation. In a case of simple peritonitis from extension of the infection, the patient should be relieved by opening the abdomen and draining. Hæmorrhage in typhoid-fever cases is dangerous and has not received the attention it deserves. The writer predicts that in the next decade hæmorrhage in typhoid cases will be treated surgically. R. T. Morris (American Association of Obstetricians and Gynecologists; Journal of the American Medical Association, October 17, 1903).

TYPHOID FEVER, PERFORATION IN.

Only about 300 cases of operation for intestinal perforation in typhoid fever have been reported since the first case in 1884. Granting that this represents only one-half or one-fourth, the number is pitifully meager when it is computed that 25,000 persons die yearly in the United States from perforation and peritonitis in typhoid fever.

The writer makes a plea for an early diagnosis and an attempt to save a part of this appalling number. On a basis of a possible 30-per-cent. recovery, which was shown to have been attained in the reported cases, 7500 lives might be preserved yearly by prompt operation. The difficulty lies in making an

early diagnosis. The abdomens of typhoid cases should be exposed and carefully examined daily. No abdominal symptoms or sign should be considered trivial. Pain is usually the first note of alarm—sudden, severe, colicky, and persistent. Exploratory laparotomy, under cocaine if necessary, is earnestly urged as a diagnostic measure in suspicious, but doubtful, cases. A plea is made for recognition and interference with the early and mild symptoms. The surgeon should stand in close relationship with the physician in all typhoid cases, as is done in appendicitis. W. D. Haggard (American Association of Obstetricians and Gynecologists; *Journal*

of the American Medical Association, October 17, 1903).

TYPHOID IMMUNIZATION.

The best method of obtaining a typhoid toxin is by the digestion of the bacilli. This product is toxic. It can excite a reaction in susceptible animals, during which they develop immunity to the injection of living typhoid bacilli; and the serum from such an animal can protect another animal against typhoid infection. The injection, intravenously, of living typhoid bacilli may result in the production of a "negative phase" of resistance. W. W. Shaw (*Lancet*, October 3, 1903).

Books and Monographs Received.

The editor begs to acknowledge, with thanks, the receipt of the following books and monographs:—

Annual Report of the Supervising Surgeon-General of the Marine-Hospital Service of the United States for the Fiscal Year 1900.—Annual Report of the Supervising Surgeon-General of the Marine-Hospital Service of the United States for the Fiscal Year 1901.—Transactions of the American Otolological Society. Thirty-sixth Annual Meeting. Volume VIII, Part II. 1903.—Transactions of the American Ophthalmological Society. Thirty-ninth Annual Meeting. Volume X, Part I. 1903.—Transactions of the Medical Association of the State of Alabama (The State Board of Health). 1903.—The Genesis of Epilepsy. By Louise G. Robinovitch.—Chronic Gonorrhœa and its Relations to Country Practice. By W. F. Bernart, Hot Springs, Ark.—The Relations Existing Between Respiratory and Intrapelvic Diseases. By Daniel H. Craig, Boston, Mass. 1903.—Operation for Cystocele and Perineorrhaphy in a Confirmed Diabetic. By Daniel H. Craig, Boston, Mass. 1903.—Splanchnoptosis caused by Omental Adhesions. By Daniel H. Craig, Boston, Mass. 1903.—Myositis Ossificans. With a Report of Two Cases—One Traumatic, the other Nontraumatic. By William J. Taylor, Philadelphia. 1903.—Resection of a Large Part of the Chest-wall for Sarcoma; Use of Fell's Apparatus for Artificial Respiration; Late Continuous Fever due to Staphylococic Blood Infection; Successful Use of the Antistreptococic Serum; Complete Recovery. By W. W. Keen, Philadelphia. 1901.—A Note on the Anatomy of the Perirenal Fatty Tissue. By W. W. Keen, Philadelphia. 1903.—Two Successful Cases of Secondary Suture, One of the Posterior Interosseous Nerve and One of the Median and Ulnar Nerves. By W. W. Keen, Philadelphia. 1901.—A Further Note on the Perinephric Fat. By W. W. Keen. 1903.—The General Practitioner and His Relation to Early Surgical Operations. By E. B. Montgomery, Quincy, Ill. 1903.—Nauheim Methods in Chronic Heart Disease with American Adaptations. By T. E. Satterthwaite, 1903.—Sixth Report of the Committee of Inspection Appointed by the Executive Committee of the Post-graduate Medical School to Review the Experiments of Dr. John F. Russell in the Treatment of Pulmonary Tuberculosis at the Post-graduate Hospital, New York, July, 1903.—Monthly Bulletin of the Division of Zoölogy. October 1, 1903.—Game Laws for 1903. A Summary of the Provisions Relating to Seasons, Shipment, Sale, and Licenses. By T. S. Palmer, Henry Oldys, and R. W. Williams, Jr., United States Department of Agriculture, Washington, D. C.—The Culture of the Central American Rubber Tree. By O. F. Cook, United States Department of Agriculture, Washington, D. C. 1903.—The Animal Industry of Argentina. By Frank W. Bicknell, United States Department of Agriculture, Washington, D. C. 1903.—Horseshoeing. By John W. Adams, United States Department of Agriculture, Washington, D. C. 1903.

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SALT SOLUTION IN TYPHOID FEVER.

IN view of the epidemic in Butler, Pa., it may prove useful to our colleagues of that town to recall the fact that saline solution has been found of very great value in the treatment of hæmorrhage of typhoid fever by many observers, including W. H. Thompson,¹ C. H. Anderson,² W. M. Gabriel,³ and J. Ramsay.⁴

¹ Medical Record, November 11, 1899.

³ Lancet, January 21, 1899.

² Medicine, September, 1900.

⁴ Intercolonial Medical Journal; Lancet, Jan. 14, 1899.

Thompson uses a hypodermic needle attached to a fountain-syringe. Anderson places the solution (2 teaspoonfuls of common salt to a quart of filtered water at 104° F.) in a reservoir raised three feet above the patient. The fluid is then allowed to flow into the median basilic vein slowly: *e.g.*, in about twenty minutes. Gabriel found rectal injections of value, but in an emergency they should not be depended upon. I will recall, in this connection, the following personal conclusions, published nearly a year ago, and which further investigations have only served to confirm, namely:—

“In all febrile diseases the alkaline salts of the blood and cells are rapidly utilized, and, the organism depending upon the salts ingested with foods for its supply, the anorexia and the reduced diet incident upon the disease tend greatly to aggravate the morbid process.

“The primary effect of deficiency of alkaline salts in the blood being to inhibit nutrition, impair the efficiency of, and finally arrest, the organism’s protective functions, it constitutes one of the most active causes of death.”⁵

Irrespective of intestinal hæmorrhages, therefore, the use of saline solution is a life-saving measure. Even small quantities—8 ounces slowly introduced hypodermically night and morning—not only tend to preserve the integrity of the body’s protective functions, but they aid also in the elimination of pathogenic elements.

THE USE, ABUSE, AND CONTRA-INDICATIONS OF CHLORIDE OF SODIUM.

NEXT to water, chloride of sodium is the most abundant compound in Nature,⁶ and, likewise, the most abundant in the fluids of the organism, its proportion to all other salts in the blood-serum being over 72 per cent. (Weber). Salt is a necessary constituent of animal tissues and plants, and, these being used as food, it is thus transferred to the organism. Carnivora obtain their chloride of sodium from the flesh and blood consumed, a pound of lean meat containing 0.6 gram (9 grains). Man increases this supply by simultaneously eating meat, vegetables, cereals, etc., and using common salt as a condiment. But this supply is smaller among Europeans than the quantity of chloride of sodium excreted daily by them; thus, while “a beef-eating English soldier consumes about 7 grams [less than 2 drachms] and a vegetarian Sepoy about 18 grams [$4\frac{2}{3}$ drachms] of common salt per day” (Stewart), the quantity secreted with the urine daily is about 16 grams (one-half ounce) besides about 2 grams (30 grains) eliminated with the sweat, fæces, the secretion of the lacrymal gland, the mucous membranes, etc. The vegetarian, therefore, seems alone to ingest sufficient salt to preserve the equipoise between his intake and output.

It is now generally accepted that the organism requires no greater quantity of salt than that ingested by Europeans, notwithstanding the discrepancy men-

⁵ “Internal Secretions and the Principles of Medicine,” page 787, and MONTHLY CYCLOPEDIA OF PRACTICAL MEDICINE, January, 1903.

⁶ Hill: “Text-book of Chemistry,” page 154. 1903.

tioned. Bunge,⁷ having found that the addition of potassium salts to his diet caused a marked increase in his excretion of chlorine and sodium, advanced the view that they represented quantitatively, not only the constituents of the chloride of sodium ingested, but also a given proportion of sodium contributed by the blood-fluids, and of chlorine derived indirectly from the potassium salts—also ingested (mainly) with vegetable foods. The process through which this occurs includes practically a continuous reaction between these potassium and sodium salts. Chloride of sodium being the main mineral salt in the body's fluids, as soon as the potassium salt reaches the latter, a double exchange occurs. The potassium salt ingested being potassium phosphate, sodium phosphate and potassium chloride are formed, the former contributing its sodium and the latter its chlorine to the urine. Still, we must not lose sight of the fact that this process only serves to account for the excess of sodium chloride excreted over that ingested. It does not serve to sustain the view that the deficient quantity of sodium chloride ingested by the average meat-eating white man is adequate. In fact, it stands apart from this question.

Conversely a feature of the whole process appears prominently to sustain the teachings of clinical experience and afford them a foundation, namely: the dearth of sodium which this constant drain at the expense of the body-fluids entails. Bunge recognized this fact when he said, referring to the systemic effects of the reactions just outlined: "The blood becomes poorer in chlorine and sodium." Schäfer also says in this connection: "Having regard to the important part which salt plays in the organism (as in the formation of the digestive secretion, or in dissolving the globulins), even a small diminution may be prejudicial to certain functions, and may give rise to the need of recovering the loss."⁸ It is not because the organism is able to adjust itself to the deprivation of common salt imposed upon it by custom without invariably giving early evidence of discomfort that it is wholesome for it to do so. The many morbid conditions which are in some way related etiologically or therapeutically to a deficient supply of chloride of sodium attest to the contrary.

Considerable circumspection should be used, therefore, before condemnatory articles as to the normal use of a mineral which plays so important a part in the economy are published: *e.g.*, before the archives of physiology are carefully scrutinized. Had this been done by one writer at least, such statements as—"The use of chloride of sodium by human beings is rather a matter of habit than of necessity"—would not have appeared.

The excessive use of salt has upon health the same deleterious influence that the excessive use of any other active agent has. This was recently emphasized by Hayem, of Paris, in the *Presse Médicale*: "We work much in the dark," says this clinician. "We have a patient suddenly attacked with delirium; his urine contains albumin, and we presume the delirium to be of uræmic origin. Investigation shows, however, that there has been a pseudorheumatism for six weeks and that sodium salicylate has been given daily; the delirium turns out to be toxic, due to the imperfect elimination of the drug. Another patient, about 40 years of age, presents himself, complaining of pains in the stomach, and vomiting; he dislikes food, even milk;

⁷ *Zeitschrift für Biologie*, Bd. x, 1874.

⁸ "Text-book of Physiology," page 884.

⁹ *Modern Medicine*, October, 1903.

the tongue is coated; the pulse slow, but irregular; his sleep is troubled by dreams. Careful inquiry elicits the fact that two months, previously, worried by shortness of breath and palpitation, he had consulted a physician, who prescribed digitalis, which he has been taking ever since. In this case, although doubtless there is functional disturbance, there is no organic lesion, and it is now a case of digitalis poisoning, including a gastritis caused by the drug."

Another case of Hayem's was in a young girl, in whom he suspected first gastric ulcers and then tabes. It developed that for a slight indigestion she had taken antiseptic powders, alkalies, acids, preparations of iron and arsenic, bromides, antipyrin, chloroform, and purgatives, with the result of inducing a violent gastric crisis of purely drug origin. These cases are much more common than supposed. Patients take for an indefinite period a medicine they believe to be harmless, or change from it to others also falsely supposed innocuous. Many mysterious symptoms in Hayem's cases disappeared by merely stopping all medicine. Parenchymatous gastritides and interstitial changes, lymphoid and leucocytic degenerations, and hypopepsia have all been noted as the effect of drugs, and not the least injurious from this viewpoint are the various preparations containing alcohol.

Hayem has named another class of patients *alkalinophagi*, from their unhappy habit of consuming vast quantities of sodium bicarbonate and alkaline mineral waters. He gives the analysis of the gastric contents, showing that instead of neutralizing hyperacidity, such a regimen produces a disastrous hyperchlorhydria.

"Laymen should be warned against the habit of constant drugging, which produces not only local gastric disturbances, but also a genuine systemic poisoning with particularly dire effects on the nervous system. The injury done in tuberculous subjects may well be imagined. For the latter, let us rely mainly on exercise, rest, sunlight, good food, and careful management of the digestive tract."

This is wholesome advice because it implies a condemnation of *excessive, injudicious*, medication, without in the least invalidating the therapeutic value of the drugs named.

On the other hand, to state that, as a therapeutic agent, chloride of sodium is devoid of contra-indications would also be unwarranted. Who could disagree with Widal, Lemierre, Merklen, and Courmont, for instance, when they state that anasarca due to renal lesions is a contra-indication to the use of saline infusions? The kidneys under such circumstances are only sufficiently pervious to allow the passage of a portion of the fluid they should eliminate: the artificial addition of more fluid could but prove harmful. The first two authors also include asystolies in the list, whether due to a local lesion or to a renal trouble, among the cases in which the saline solution should not be used. And yet we find Bovet, Huebard, Guyon, Potain, Tuffier, and others resort to this measure as a curative agent in pycelonephritis. But none of the cases reported by the latter showed anasarca, the forbidding sign. In obstetrical cases Norris has found that an excessive amount of salt solution aggravated the condition of the kidneys, produced œdema of the lungs, and helped to do the very thing one aims to avoid. He gives as a limit one quart of salt solution and no more, until free diaphoresis and diuresis or catharsis has occurred. When there is œdema of the lungs, he rightly states that it should not be employed at all, and that he has seen œdema of the lungs aggravated and

the patient's serum run out of her mouth as the result of too free use of salt solution. Nevertheless, he considers that large amounts of salt solution are of the greatest value. Besides such cases, those in which salt solution may be considered as contra-indicated are as outlined by Wesley Boyce¹⁰: pericardial effusion, atheroma, cardiac degeneration, advanced valvular lesions, thrombosis and recent cerebral apoplexy, chronic nephritis, and hæmorrhage before ligating the bleeding vessels.

At times, the immediate effects of saline infusion is such as to suggest aggravation. "For a short time all signs of improvement continue. The tendon-reflexes disappear, and then, after an interval of ten or twenty minutes, the patient begins to vomit and have severe diarrhœa. The expression becomes anxious; there is cyanosis, followed by a violent and general chill; at the same time the *temperature rises rapidly*, reaching even 40° C. This constitutes the stage of heat; the face is cyanosed, the conjunctiva injected, and the pulse and respiration more frequent. In about forty minutes the patient commences to return to the normal condition. The temperature, however, remains high for several hours, then declines and on the following day great improvement may be noticed. The cyanosis disappears, and the pulse and respiration become more vigorous and normal in frequency."¹¹

Referring to the manner in which the organism rids itself of the pathogenic elements in the blood, the authors of the foregoing lines, Bosc and Vedel, introduce the following remark: "The toxins, however, do not appear to be eliminated by the urine, for hypotoxicity of the urine was observed after the injection; and, curiously, the urine seemed to possess properties antagonistic to the toxic properties of the blood. It has also been supposed that the injections favor oxidation."

In the light of prevailing views oxidation processes in the blood-plasma must remain in the realm of suppositions, since the process cannot be accounted for. With the adrenal secretion converted, as I have suggested, into adrenoxin,—*e.g.*, into an oxidizing compound,—oxidation becomes a normal consequence: it is one of the means adopted by Nature to protect the body by converting pathogenic elements—with the aid of trypsin and fibrinogen—into eliminable products.

C. E. DE M. S.

Cyclopædia of Current Literature.

AGGLUTINATING SUBSTANCES IN NORMAL BLOOD.

Park gives an excellent idea of how much wider than is ordinarily supposed is the problem of agglutination and its significance. Agglutination is probably connected with immunity, and the subject of natural immunity is one of the most interesting in the whole domain of medicine. Just why some people con-

tract certain diseases while others apparently of similar constitution and without any known artificial protection remain refractory is one of the mysteries that modern pathologists are more interested in solving than almost any other of the obscure problems which come up for their consideration. It is very clear that this natural agglutination described by Dr. Park is going to be the source of many

¹⁰ American Journal of Obstetrics, January, 1899.

¹¹ J. Bosc and V. Vedel: Revue de Médecine, June 10, 1898.

errors and a number of false hopes unless the greatest care is exercised in precautions against possible error before definite announcements of results are made. It would seem that even such excellent authorities as Shiga, the discoverer of the bacillus of dysentery, and our own Flexner were led into error because of this hitherto unconsidered factor in the problems they were working out. Duval and Bassett, who announced that they had found the dysentery bacillus in a number of cases of cholera infantum a little over a year ago were certainly misled to false conclusions, and their mistake is due to the assumed principle that the existence of agglutinating powers in the blood-serum of certain patients was the proof of the fact that they were being affected by certain forms of bacteria. It is interesting to find that young animals have very few agglutinins in their blood, and that therefore probably the same thing will hold true for young children. It is possible that the first agglutinating powers obtained by the child's blood are derived from its mother's milk, and are possibly due to the fact that this fluid has been influenced by the immunity to certain diseases produced by attacks of these specific diseases during the mother's previous life. (Medical News, November 21, 1903.)

APPENDICITIS.

The abdomen should be examined in all important pelvic cases and *vice versa*. If the abdomen is opened for pelvic disease the appendix should always be examined. If the appendix is found to be catarrhal or adherent, or if it contains concretions, it should be removed. The advisability of purely prophylactic appendicectomies is a question to be left to the judgment of the individual surgeon. When the abdomen is opened for

the relief of intestinal obstruction, one must determine whether the appendix or pelvic viscera have been the cause of the trouble. If the appendix must be removed the invaginating operation is the one to be preferred. H. P. Newman (Journal of the American Medical Association, October 10, 1903).

BLOODLETTING ON METABOLISM, EFFECTS OF.

The writers refer to experiments carried out on dogs in a state of nitrogenous equilibrium. The withdrawals of blood were made while the animals were under the influence of ether-chloroform. The metabolic effects of anaesthesia and of operation were carefully controlled. They found that haemorrhages of about 3 per cent. of the body-weight caused, among other effects, diminished secretion and decreased specific gravity of the urine at first, the reverse in twenty-four to forty-eight hours afterward: increased elimination of nitrogen and sulphur, and decreased excretion of phosphorus, in the urine. The amount and consistency of the faeces were unaffected. Repeated haemorrhages from the same animal resulted in cumulative quantitative metabolic effects in harmony with those indicated above, and were followed by steady decline in body-weight and gradual increase in average daily volume of urine, even when the animals ate the same amount and kind of food as at the beginning.

After successive haemorrhages at intervals of a few days the content of nitrogen, sulphur, and phosphorus in the blood, as well as specific gravity and number of red corpuscles, gradually diminished, whereas the leucocytes steadily increased in number. Their data confirm the general metabolic results obtained in the earlier experiments

by Bauer and others, and disagree with the opposite conclusion, as to effect on proteid catabolism, announced two years ago by Ascoli and Draghi. W. J. Gies and P. B. Hawk (Transactions of the Society for Experimental Biology and Medicine: Medical News, November 14, 1903).

CANCER, AN ALLEGED SPECIFIC TREATMENT OF.

At a meeting of the Abernethian Society of St. Bartholomew's Hospital, held on November 5th, Dr. Jossé Johnson read a communication on Dr. Otto Schmidt's specific treatment of cancer, which he had recently investigated. The treatment, he said, was based on the parasitic theory of cancer. About the middle of 1892 Dr. Schmidt had succeeded in cultivating from cancer an organism which fulfilled most of the conditions of specificity; injections of the parasite had produced tumors in two white mice. The appearance and character of the parasite were very varied: the forms figured by Schuller, the fuchsin bodies of William Russel, those described by Plimmer were all varieties of one and the same parasite, and Dr. Schmidt had succeeded in cultivating all the forms from a single isolated parasitic cell. The principle of treatment was immunization, either active by injecting the killed parasites themselves or passive by injecting the serum derived from animals (horses and sheep) that had been thus treated. The treatment was usually commenced in a very mild form, beginning with a dose of $\frac{1}{100}$ milligram suspended in solution of carbolic acid (0.5 per cent.) gradually raised by small increments to usually a maximum of 1 centigram. Into what part of the body the injection was made was immaterial, except that it should not be made into or near the

tumor. The injections were subcutaneous. The most striking result was a specific reaction in the tumor. In a non-cancerous person no effect was produced. After the second or third injection some *malaise* and pyrexia occurred.

Cachectic patients often failed to react, presumably because their blood was charged with antibodies. The local reaction took the form of swelling in the tumor, and deposits which became softer or even elastic, with tenderness and redness, and often local rise of temperature. The activity of the reaction diminished as the patient became immune. Closed sarcomata reacted most of all. So far 29 cases had been treated and had given results sufficiently definite to be reported.

In 140 cases injections had been employed for diagnostic purposes; a positive reaction was obtained in all the 140 and in 28 of the 29 first-named cases. In the exceptional case a simple ovarian cyst was found at the subsequent operation, establishing an error in diagnosis. One of the cases was a sarcoma, all the others were carcinomata. Illustrative cases were quoted. Around the growth and deposits a zone of inflammatory oedema was usually seen, due to infiltrated leucocytes. In open growths the drying up of the secretion and the cessation of purulent discharge was a conspicuous feature: a crust formed, including the superficial layers of the growth, which was cast off, and other crusts formed and were cast off until healthy tissue was reached. Where crusts could not form gangrenous pieces were thrown off, and shortly the foul odor disappeared.

The value of the reaction as a further proof of specificity of the parasite was emphasized. The reaction was of an inflammatory nature and lasted, if acute, a few days, but a slower, milder process might be obtained if preferred. The

emigration of leucocytes was necessary for the removal of the growth. The leucocytes finished what the antibodies had begun. The specific treatment greatly hastened cicatrization, but this occurred at the periphery of the growth, not at the center, as in the natural process. The cancer-cells were absorbed and scar-tissue was formed in its place. The mechanical effects of scarring were sometimes unpleasant. The relative value of the active and passive immunization was not at present settled. The serum injections gave great relief, but it was not certain that the improvement was so permanent. The potency of the immunization could not be estimated, as animals were not killed by the injection of a virulent culture of the parasite.

Reference was made to the use of cytolsin treatment in combination with the specific treatment. Two factors were necessary for the removal of a malignant growth: the removal of the active element—the parasite; and the removal of its effects—the tumor. Such would be a cure of cancer, but it would not necessarily be a cure of the individual case, as there was a third factor, namely: how much the vital organs had suffered. Perhaps the treatment would be most useful as a sequel to operation. In the cases quoted after an interval of five or six months the growths and deposits had not at any rate increased, no new deposits had formed, and an increase of weight and improvement in general condition had occurred. When the method had stood the test of time, it was to be hoped that a cure of cancer by it might confidently be spoken of. (*British Medical Journal*, November 14, 1903.)

CANCER OF THE LARYNX.

The operative treatment of cancer of the larynx is subdivided by Semon into

the following procedures: 1. Intralaryngeal operation. From the infiltrating nature of the cancerous growth, its complete eradication by intralaryngeal methods would be almost impossible. Although he has reported a successful case, yet he would never deliberately try to remove an intrinsic cancer from the larynx by intralaryngeal methods. 2. Thyrotomy. This operation, if restricted to the cases in which it is really applicable, gives almost ideal results. But the following conditions are essential: (*a*) The operation must be restricted to early stages of intrinsic malignant disease. (*b*) For this purpose an early diagnosis is indispensable. (*c*) The operation must be thorough; no sentimental considerations regarding the amount of vocal power to be retained must interfere with the removal of a sufficient area of healthy tissue around the new growth in all directions. (*d*) Should it be found, after opening the larynx, that the growth is more advanced than was thought, a more extensive operation must be performed. These conditions complied with, thyrotomy is *the* operation in early stages of cancer. 3. Partial extirpation of the larynx implies the removal of not less than one entire wing of the thyroid cartilage. The operation offers no greater technical difficulties than thyrotomy. 4. Total extirpation of the larynx. While the performance of this operation may, in some cases, be necessary to save the patient's life, yet the author does not look favorably upon it, for the reason that the patient's after-existence is so unpleasant. 5. Subhyoid pharyngotomy is suitable for cases in which the disease starts from the epiglottis or from the aryteno-epiglottidean fold. It is a curiously fatal operation. 6. Palliative tracheotomy comes in question only where the patient or his condi-

tion forbids the performance of total extirpation of the larynx.

Gluck describes his methods of performing thyrotomy, semilaryngectomy, and extirpation of the larynx. His results have been most satisfactory; out of 22 complete laryngectomies, death took place in only 1—a man, aged 70 years, who died on the eleventh day, from iodoform poisoning. Out of 27 partial laryngectomies, death took place in 1—from hemiplegia after tying of the carotid. After the healing of these large operations the patients eat like normal individuals, and do not need a tracheal cannula. (*British Medical Journal*, October 31, 1903.)

CANCER OF THE UTERUS, X-RAY TREATMENT OF.

The following method is recommended by the author: Application of the x-rays directly to the cervix and uterus, through the vagina. A Nott or Ferguson speculum will be found convenient for this purpose. If there is a fibroid tumor present in the body of the uterus, as is usually the case, the x-ray must be also applied through the abdominal wall directly to the tumor. Application of the high-tension discharge by means of vacuum electrodes must be made to the patient. The results of this plan of treatment were excellent. The writer, however, cannot express an opinion as to the possibility of the complete disappearance of uterine cancer under this treatment. Sinclair Tousey (*Medical News*, November 14, 1903).

CANCER PROBLEM.

The etiology and cure of cancer has occupied the minds of men and stimulated the research from the very dawn of medicine and to-day there is hardly a

large laboratory, here or abroad, where diligent study is not directed to this most difficult of problems. It is to be regretted that with so enormous a literature—Behla has collected several thousand references up to 1901—such a discordance of opinions should still exist among the foremost pathologists.

Nevertheless much has been done to cure cancer. Operations have been so perfected—we refer only to the Wertheim method of hysterectomy—that many a patient remains free from recurrence for the rest of his life. With better education of the laity and keener diagnosis on the part of the physician, the disease is recognized earlier and hence the outlook in general is more favorable. Superficial cancers have even been cured without the knife, by such agencies as liquid air and arsenic, and, more recently, with Roentgen and radium rays. But the fact still remains that most internal cancers are hopeless and that the surgeon often operates only with the hope, at best, of prolonging life for a few months.

In glancing over the more recent literature, one receives the impression that the parasitic theory of cancer is on the wane. The laity is somewhat late to discover what physicians have already discarded; hence it does not seem strange that the city council of Vienna recently recommended an exhaustive trial of cancerin in the hospitals. It will be remembered that cancerin was obtained directly from the cancer-cells by Adamkiewicz, whose methods of bringing his discovery before the public were neither ethical nor convincing. Yet the idea does not seem altogether fantastical that in cancer the epithelial cell no longer works in unison with the other cells for the benefit of the entire body, but solely for its own good, thus assuming the rôle of a parasite which when injected in attenu-

ated doses may inhibit the growth of similarly abnormal cells in the body.

This theory has, however, met the same fate as the brilliant work of von Leyden, the diligent research of Plimmer, Sanfelice, and our own Gaylord, and the painstaking studies of Feinberg, who has devoted an entire volume to the finer structures of the protozoa and has demonstrated their close resemblance to the cell-inclusions of cancer. For every convincing article, a second one appears which points out some flaw in the observations. Recently T. Honda (*Virchow's Archiv*, volume clxiv, No. 1) has found the inclusions not only in glandular carcinomata, but also in a number of other tumors and inflammatory processes; so that they can hardly be looked upon as specific.

Doubtless the real cause of cancer is not always the same. In certain organs, as in the uterus, the various transition stages between chronic inflammation, benign adenoma, and malignant carcinoma are often so apparent, that the whole seems to form one continuous process. It seems very probable that malignancy here is merely the end-result of chronic irritation and inflammation. But there still remains a large number of cases in which the connection is not so clear and with a better knowledge of the life-history of protozoa and with means to grow them outside of the body the mysterious hyaline bodies may still play a prominent part in pathology. Let us hope, then, that a satisfactory therapy may be not so far off. Editorial (*Medical News*, November 21, 1903).

CANCER, TREATMENT OF.

All operable carcinomata ought to be removed by the knife as early and radically as possible. By pretty rapid and dexterous operating and the avoidance of

all unnecessary bruising of and pressing into the affected parts, by which cancer-cells may be driven and dispersed into neighboring tissues, the prospects of smooth healing and nonoccurrence of relapses are greatly improved, according to the writer's experience. As soon as the surgeon can discharge the patient the latter ought to return to the care of his physician for such constitutional and other local—particularly x-ray—after-treatment as may be indicated by the nature of the case, in order to prevent or postpone relapses as much as may be. In many cases much can be done by diet, hydrotherapeutics, frequent exposure of the body to the sun or the electric light, the tonics of arsenic, iron, and quinine, toward increasing the constitutional resistance against the carcinomatous toxins and the making of a soil unsuited to the proliferation of degenerated cells or to the growth of cancer parasites. Leonard Weber (*New York Medical Journal* and *Philadelphia Medical Journal*, October 31, 1903).

CAUSE OF DEATH, JUDICIAL DETERMINATION OF THE.

The cause of death should be determined by a jury of experts, consisting of a pathologist, bacteriologist, chemist, medical or surgical practitioner of admitted ability, neurologist, etc. This jury, sitting in open court, should be empowered to review the postmortem, chemical, bacteriological, and other examinations, hear testimony bearing upon the symptoms preceding and leading to death, review any evidence bearing upon the cause of death, and submit an opinion or opinions as to the cause of death formulated in the shape of a report, or majority and minority reports, for the consideration of the lay petit jury before

which the case will be tried. Solomon Solis-Cohen (Medical News, November 21, 1903).

CHYME ANALYSIS, ABSOLUTE PRECISION IN.

At present no better indicator is known for the quick and absolutely correct determination of free hydrochloric acid than is the supersaturated alcoholic solution of tropæolin 00. This solution is most excellently adapted for very accurate clinical purposes. The dimethyl-amidoazobenzol, as an indicator for only free hydrochloric acid in chyme is absolutely wrong, consequently misleading and hence causes mistaken diagnoses. But as it reacts also to *very weak solutions* of organic acids it can be used for the quantitative determination of such acids.

By the successive use of tropæolin, dimethyl, and phenolphthalein in the same specimen of chyme we can determine, quantitatively, free hydrochloric acid, organic acids, and the general acidity. M. I. Knapp (Medical News, November 14, 1903).

COLITIS, TREATMENT OF, BY LAVAGE.

The full advantages of the treatment of either acute or chronic colitis by free irrigations have never yet been determined, simply because of the mechanical difficulties of this method. We know that many cases have been benefited and some cured, but we also know that the pain and discomfort attendant upon it, especially in acute cases, are often so great that it cannot be efficiently employed.

Irrigation by means of the double-current rectal irrigator is more or less unsatisfactory because of the doubt as to how far up the water passes. Doubtless it can be made to go much higher in

experienced than in inexperienced hands; but the best way to be sure of reaching above the rectum is to clamp the tube for the return-flow, and that leaves us merely a high enema rather awkwardly administered.

Practically all high irrigation is reduced to the administration of high enemas through long tubes, with or without a return-flow, but preferably without, because if the return-flow is relied upon to prevent overdistension, harm may be done and accidents happen. The sensation of the patient that the colon is full is the safest indication to cease the application, and even when no attempt has been made to reach very far the author has known severe shock and high temperature to follow such an application—shock so severe and temperature so high (104° F.) as to be alarming. Even by this means, the most efficient of all, there is doubt whether we often reach much beyond the sigmoid.

To all methods of treating even the sigmoid, to say nothing of the colon, by sprays or insufflations with compressed air little attention need be given. If anybody is curious as to the possibility of reaching the colon with a spray, two experiments may be tried: First, a Kelly tube introduced as far as may be possible. By any light its upper end will be found closed by a tense, pale, reddish membrane stretched firmly over every part of it, which membrane is the lateral wall of the bowel. Occasionally the end may be closed by several folds of membrane converging to a slight depression in the center, and then the instrument happens to be in the long axis of the gut. Now a pressure of twenty pounds should be used to spray into the tube and against the obstruction. The tube will be filled with the spray, the shirt-cuff of the operator will often be ruined by the return,

and, when things have cleared and he again looks in, all his medication will be found lying in the tube against the obstructing membrane. As the tube is slowly withdrawn, the rectum always pressing firmly against its end, no fluid will escape and at last all that has been thrown in will have to be caught upon cotton as the tube finally escapes.

More powder than fluid can be forced to lodge within the bowel, because it may adhere along the bowel as the tube is withdrawn, but anything like a diffuse application to the surface of either the rectum or sigmoid is not to be expected.

There is, however, a way to do it, which is the other experiment. The spray-tube should be introduced into the speculum through a perforated cork, which closes the speculum and prevents the escape of air, or the spray may be introduced three inches into the rectum without any speculum, and from ten to twenty pounds' pressure applied. The sudden overdilatation of the large intestine will cause such shock, such *evident* distension, and such pain as will end the treatment at once and forever unless the experimenter is very bold or the patient unusually timid about expressing his sentiments.

Once in a great while, but very, very rarely, when a large speculum, preferably a bivalve which can be opened after insertion, is introduced and forcibly distended, air will rush into the rectum as it does into the vagina, and balloon it out, so that its sacculations and so-called valves may be plainly seen. Such a rectum might be efficiently sprayed, but the average practitioner will never see such a condition, nor can it be produced at will. To most of the profession the rectum will still remain what it always has been—a closed tube—in spite of the beautiful schematic pictures

of valves and pockets which remind the uninitiated of a highly decorated circular iron staircase seen from below, the steps being the valves and the interspaces the pockets.

Every part of the rectum proper can be reached for local treatment; and diseased points in the sigmoid may be reached through specula; but the only practical way to be sure of reaching all parts of the sigmoid and anything above it is by filling it with medicated fluid.

The creation of an artificial anus is not indicated in these cases, although, were it not for the difficulty and danger of closing it, the writer has thought it might work well in acute, severe, and dangerous cases of colitis when done on the right side.

The temporary valvular anus in the caput coli described and practiced by Gibson may open up an entirely new field of treatment. In any event we may learn from it what value there is in thorough lavage. The cases so far reported read very hopefully, but they are all chronic. Why should it not do much better in the acute? It may seem radical, but the treatment of acute ulcerative colitis often needs to be radical to save life, and a good surgeon could do the operation with less shock and suffering than are often caused by unskilled efforts to give a high enema. Charles B. Kelsey (*New York Medical Journal* and *Philadelphia Medical Journal*, October 31, 1903).

DEAFNESS, CHRONIC, TREATMENT OF.

The large majority of cases of chronic deafness are of tympanic origin and may be considered under the following heads: Chronic tubal. Chronic hypertrophic catarrh of the middle ear. Suppurative processes within the middle ear, resulting in partial or complete destruction of the drum-membrane, malleus, and incus.

Chronic hyperplastic otitis, also spoken of as "dry catarrh," or sclerosis of the middle ear. There are certain cases of advanced catarrhal deafness—even among those in which no evidence of serious labyrinthine involvement can be found—which do not respond to treatment. In the large majority of cases the power of audition can be distinctly improved. In the early stages of catarrhal, or tympanic, deafness the majority of cases are susceptible of practical and complete cure. In advanced stages of catarrhal deafness rational treatment often results in an improvement, which adds greatly to the patient's enjoyment of life, though the normal hearing power may never be regained. Where but slight improvement of hearing is accomplished, the result of treatment is often of value to the patient in arresting a process which might otherwise lead to very marked or total deafness. P. D. Kerrison (*Medical Record*, November 21, 1903).

DEEP BREATHING.

Deep breathing is essential to good health, and is in many cases a valuable therapeutic measure. Its importance is not at all generally appreciated. It should be a part of every child's education, and is especially indicated for backward and sickly children. The profession owes it to itself to study more deeply this vital question and to be able to instruct the laity fully on all its bearings. R. C. Newton (*New York Medical Journal*, November 7, 1903).

DIABETES MELLITUS, REACTIONS OF THE BLOOD IN EXPERIMENTAL.

After a series of experiments, the writer reaches the following conclusions:—

1. The subcutaneous injection of an alcoholic solution of phloridzin, which causes a transitory glycosuria, is shown by a slight, though readily demonstrable, increase in the serum of the rabbit of the hæmolytic complement for bovine erythrocytes: this increase is to be explained as occurring coincidently with the inflammatory reaction of the organism to the injection.
2. No effect of injections of phloridzin on the amboceptor for bovine erythrocytes can be demonstrated.
3. The intraperitoneal injection of adrenalin chloride is followed by no marked effect on the blood-reactions: the injection may, however, cause an inflammatory reaction, and so cause an increase of complementary activity.
4. The complete removal of the pancreas from dogs, which causes a true diabetes mellitus of severe type, is followed by a marked decrease of the hæmolytic activity of the diabetic dogs' serum for both rabbits' and guinea-pigs' erythrocytes.
5. The diabetes caused by the complete extirpation of the pancreas is further characterized by what is to be interpreted as a complete loss of the normal bactericidal property of the serum of the dog.
6. This decrease of the hæmolytic activity of the diabetic dogs' serum for erythrocytes is due to loss of hæmolytic complements.
7. The complete removal of the pancreas is as necessary to this loss of complements as it is to the production of a diabetes.
8. The complete removal of the pancreas has not deprived the organism of its power to react to the inflammatory process by an increase of the complementary substances.
9. No disturbance of the normal relation of the receptors of the erythrocytes to specific hæmolytic amboceptors can be demonstrated in the course of a true experimental diabetes.
10. The loss of the complementary substances in diabetes

mellitus points conclusively to the fact that no relation exists between the leucocytes of any type and the production of the complements. 11. A decrease in the amount of glucose excreted by the diabetic organism cannot be shown to occur in the course of a secondary infection, at least during the earlier stages of the diabetes. J. E. Sweet (Journal of Medical Research, October, 1903).

DIPHTHERIA, DIAGNOSIS OF.

The diagnosis of catarrhal diphtheria (to continue to use that name for the present) *depends entirely upon bacteriological examinations*. However suspicious the circumstances surrounding the case may be, or however direct the history of exposure, it is obvious that a diagnosis cannot be made with certainty without taking cultures. In cities where bacteriological laboratories are maintained by the boards of health this is no particular disadvantage, but in places where such facilities are lacking the diagnosis of catarrhal diphtheria must be an exceedingly rare one. When an outbreak of diphtheria is in progress, in even a remote village, with an unusual prevalence of sore throats and especially when these seem to be responsible for the continuance of the epidemic, it may become necessary for the local health authorities to have cultures taken, and it is interesting to know that in New York State there is no place more than one hundred miles from a laboratory where work of this sort could be done. Inoculated culture-tubes have been received at the laboratory of the Willard State Hospital after being three days *en route* in both winter and summer and satisfactory growths of diphtheria bacilli obtained from them. T. W. Salmon (Medical News, November 21, 1903).

DISTURBED DIGESTION, THE NOSE, THROAT, AND AIR-PASSAGES AND.

The disturbance of the air-passages due to faulty digestion may be brought about in three principal ways: The nose and throat condition may be the expression of a general constitutional state. They may result from direct irritation caused by acid eructations or vomit. They may, in cases secondarily due to bacterial invasion, depend primarily on the reduced resistant power of the tissues caused by faulty or depraved nutrition. Digestive disturbances, on the other hand, may be directly due to the swallowing of unhealthy secretions from the nose and throat. They may also be due to other causes not quite clear. Clinical experience has shown that a certain number of cases of disordered digestion fail to improve until some septal deformity has been removed, or overgrown tonsils and adenoids ablated. Beverly Robinson (Boston Medical and Surgical Journal, November 12, 1903).

EXOPHTHALMOS. ETIOLOGY OF.

The most common causes of protrusion of the eyeballs are trauma and suppuration of the orbits, periostitis, thrombosis of the ophthalmic vein or of the sinus; less commonly hæmorrhage, emphysema, or tumors of the orbit. Two distinct diseases are characterized by this symptom: Basedow's disease and pulsating exophthalmos. In high-grade myopia and complete external ophthalmoplegia there may also be an undue prominence of the bulbs. It is less commonly known that cerebral disease (tumor, abscess, external and internal hydrocephalus, and chronic serous meningitis) leading to increased intracranial pressure is frequently accompanied by exophthalmos, and the author cites five cases of his own observation. Probably if all cases were

to be examined systematically with the exophthalmometer before and after lumbar puncture, the symptom would be encountered more often. Rarely it may be due to irritation of the sympathetic; in most instances it is an expression of impeded circulation in the cavernous sinus. As a rule, the tumor or abscess will press directly upon the sinus, though in rare cases the general intracranial pressure may be so extreme as to interfere by itself with the circulation. Compression of the sinus in the posterior fossa will also bring about stenosis in the cavernosi. Individual variations are present and sometimes the anastomoses with the facial vein are so abundant that the entire cavernous sinus may be compressed without the appearance of exophthalmos. In such cases, however, there is generally œdema of the lids. G. Flatau (Medical News; from Deutsches Archiv für klinische Medizin, volume lxxvii, Nos. 5 and 6, 1903).

EYE, FORMALIN IN INFECTED WOUNDS OF THE.

A series of experiments led the writer to conclude that formalin, 1 in 500, may be injected into the vitreous of rabbits without producing more than momentary disturbance of the eye. It is possible to cause panophthalmitis and consequent destruction of the eyes of rabbits by injecting 3 minims of a turbid solution of streptococci into the vitreous. It is possible to produce the same result by infection in the ciliary region caused by penetrating wounds with infected pointed instruments. Infections of the vitreous and ciliary region do not necessarily cause destruction of the eye. At times the infected eye recovers spontaneously, the inflammatory symptoms gradually subsiding. Formalin, 1 in 1000, when injected into the vitreous, exerts no in-

fluence on streptococcic infection of the vitreous. The results of these experiments warrant the treatment of commencing infections of the eye by injections into the capsule of Tenon of 1 in 1000 or even 1 in 500 formalin solution.

Remarks.—In view of the large quantity of infected material injected into the eyes of these rabbits it is possible that the results would have been more favorable had the injections of formalin been made more frequently.

It will be remembered, the statement has been made that in the first experiment the rabbit which had no treatment and the rabbit which had the intracapsular injections recovered completely. This is true, but it is proper to state that there remained a very slight opacity apparently in the posterior part of the lens, or on its posterior capsule in each animal. This was probably due to the injury to this structure by the hypodermic needle, for it is quite impossible to perform the above detailed manipulations without struggles. This was the case with all the animals notwithstanding the free use of cocaine. It is also possible that these opacities were deposits of lymph on the posterior surface of the lens such as are frequently observed after certain types of inflammation of the uveal tract. In all other respects these eyes were normal. J. H. Claiborne and E. B. Coburn (Medical News, November 21, 1903).

FILARIASIS IN PORTO RICO.

Twelve per cent. of the mounted battalion of the Porto Rican Provisional Regiment of Infantry present circulating embryos of *Filaria nocturna*. Presumably there is approximately a similar percentage among the people of Porto Rico at large. All but 3 of these soldiers have presumptive history of filarial disease before entering the service. In 5

cases there is strong presumptive proof of the disease in the families of these men. All were thoroughly exposed to mosquitoes in closely crowded towns before infection. All are young men. Most have been three years in the service without serious illness. They come from all parts of the island. All, save 4, have had attacks of inguinal or femoral adenitis with chill, fever, pain, and a red line on the inner aspect of the leg and thigh at varying intervals. Six have had chyluria. B. K. Ashford (Medical Record, November 7, 1903).

GALL-BLADDER DISEASE, SUGGESTIONS AS TO PROGRESS IN.

Recent medical literature has abounded in discussions of the subject of cholecystitis and cholelithiasis, and these articles, headed by the symposium presented last May at the sixth triennial session of the Congress of American Physicians and Surgeons at Washington demonstrate beyond cavil two facts: first, that many facts are as yet unexplained, and that others recently explained are not yet fully appreciated by the general body of practicing physicians.

One fact is particularly gratifying, and that is that the leading clinicians are thoroughly in accord as to the fact that cholecystitis and cholelithiasis, having reached an acute and severe type, are legitimately surgical diseases. In too many instances surgeons and clinicians are in disagreement as to the necessity for surgical intervention, not only in individual cases, but, indeed, in certain diseases as a class without reference to the specific example. Such an instance is seen in the recent investigations as to the surgical treatment of chronic nephritis. Many cases are being reported from all over the country which show beyond doubt the efficacy of such intervention,

and yet, because, apparently, it does not cure every case, the clinicians, and many of the foremost among them, are contending that surgery is useless. In the face of fully authenticated reports and considerable personal observation, we can but regard this view as mistaken and deplorable, and because of this and similar disagreements it is particularly gratifying to see such clinicians as Musser, Stockton, Fitz, and others advising prompt surgical intervention.

Several authoritative articles recently reviewed tend to the view that gall-stone disease is undergoing an evolution similar to that through which appendicitis has passed. Early recognition by the physician and universal acceptance of the fact that appendicitis is a surgical disease have done quite as much toward lowering the former appalling mortality as has improvement in operative technique. Operative technique is already good in the surgery of the gall-bladder and ducts, and although we predict numerous and radical changes as regards the use of drainage in this work and making due allowance for the improvement which always accompanies wider knowledge of gross and histological pathology, we look for the greatest improvement in mortality statistics through the general earlier recognition of the disease and its earlier reference to the surgeon.

Unquestionably, as is demonstrated by the frequency with which gall-stones are discovered at postmortem examinations where none had been diagnosed during life, the symptoms of cholecystitis and cholelithiasis are very frequently misinterpreted. A closer study of many of the cases of chronic indigestion so difficult of explanation and even more difficult of alleviation will probably reveal the existence of disease of the gall-bladder or ducts.

The exact localization of pain and tenderness at Mayo Robson's point (at the junction of the outer one-third with the inner two-thirds of a line drawn from the ninth right costal cartilage to the umbilicus), sharp, stabbing pain in this same region elicited by compressing the lower ribs, acute tenderness at Boas's point (the twelfth intercostal nerve, one inch to the right of the spine of the twelfth dorsal vertebra), leucocytosis (except in cholecystitis from typhoid infection), lowered blood-coagulability and even if necessary the diagnosis by exclusion will prove gall-bladder disease to be much more commonly recognized clinically, much more promptly treated surgically, and much less frequently fatal. D. H. Craig (Editorial in *Annals of Gynecology and Pædiatry*, November, 1903).

GASTRIC-JUICE ACTIVITY.

The gastric juice to be tested is diluted with three times its volume of a 0.2-per-cent. solution of HCl. This diluted juice and the standard albumin solution are placed in the incubator about fifteen minutes in order to be warmed to body-temperature. In each of two test-tubes are placed 10 cubic centimeters of the standard acidified albumin solution. To one tube 5 cubic centimeters of the diluted gastric juice is added, to the other (the control tube) 5 cubic centimeters of a 0.2-per-cent. solution of HCl. These tubes are then placed in the incubator at from 37° to 40° C. for exactly seventy minutes. At the end of that time they are removed, and 10 cubic centimeters are taken from each tube and placed in the centrifugal tubes graduated to 0.02 cubic centimeters. To each tube is added 5 cubic centimeters of a 10-per-cent. solution of triehloroacetic acid and, after inverting the tubes several times, they

are placed in a high-speed centrifugal machine and centrifuged two hours. At the end of this time the tubes are removed and the volume of sediment measured. The sediment in the control tube will be an index of the original albumin strength of the standard solution. The sediment in the second tube will be less, if digestion has taken place, the difference in the two sediments representing the proportion of albumin which has been transformed into peptone. H. W. Bettmann and J. H. Schroeder (*Medical Record*, October 31, 1903).

GASTRIC SECRETION INDUCED BY A REFLEX FROM THE INTESTINE.

The introduction of alcohol into the intestine sets up a reflex which causes the secretion of gastric juice. Section of the nerves which supply the stomach (vagi and sympathetic), or the administration of atropine, prevents this reflex, whereas nicotine has no such effect. Of the substances other than alcohol examined in this connection, it was found that oil of peppermint also induces a reflex secretion, but that other irritants, such as mustard and ether, do not show this action. Section of the nerves, or the administration of atropine or nicotine, followed by the introduction of alcohol directly into the stomach, gave results similar to those obtained when the alcohol was injected into the intestine. H. C. Jackson (*Transactions of the Society for Experimental Biology and Medicine: Medical News*, November 11, 1903).

GASTROPHILUS EPILEPSALIS LARVÆ IN THE SKIN OF AN INFANT.

The writer saw the following case, which was entirely unique in his experience. The patient was a female infant, 3 weeks of age, born prematurely at the

seventh month and bottle-fed from birth. Two days before he saw it the nurse noticed a papular and pustular eruption of the neck beneath the jaw, consisting of not more than eight or ten lesions and one at the back of the neck. There was also noticed a pustule on the palm of the hand and one between the great and second toes of the right foot. Little attention was paid to the eruption at first, as it seemed insignificant until the next day, when the nurse found between the toes what appeared to be a small living worm which had evidently come from the pustule, leaving a distinct and very evident hole. Later a similar worm came from the palm of the hand and one from the pustule at the back of the neck.

When the writer saw the child there was a hard indurated swelling at the back of the neck discharging pus, and resembling a furuncle from which the "core" had been squeezed. The eruption beneath the jaw consisted of small pustules and the lesions between the toes and on the palm had nearly disappeared.

The "worms," of which three specimens were obtained, were about one-fifth of an inch in length and evidently the larvæ of some species of fly. The specimens were sent to F. L. Washburn, State Entomologist, for identification, and by him forwarded to D. W. Coquillett, a specialist in diptera in the Department of Entomology at Washington, D. C. Coquillett identified them as *Gastrophilus epilepsalis*, a species somewhat closely allied to *Gastrophilus equi*, or bot-fly.

The infant had slept in its carriage out of doors for many hours nearly every day since its birth and the parent-fly might have deposited its eggs on the skin while the child was sleeping. A more remote possibility suggested itself in the fact that the child had been rubbed daily with olive-oil, and it seemed just possible

that the eggs of the fly might have been deposited in the oil and rubbed into the tender skin by the nurse. Burnside Foster (St. Paul Medical Journal, October, 1903).

GASTROTOXIN, PRELIMINARY REPORT UPON A.

Theohari and Babès (Centralblatt für allgemeine Path., Bd. xvi, No. 11, 1903) have endeavored to produce a serum having specific toxicity for the peptic-gland cells of the stomach by injecting one species with macerations of portions of the gastric membrane of another species. The object of the investigation was to study the effect of such a specific toxin, and eventually to obtain some light upon the obscure etiology of gastric lesions. Goats were immunized against the peptic glands of the dog. The results of the work are summarized as follows: 1. A gastrotoxin serum of a low degree of specificity causes marked hypersecretion. 2. A powerful gastrotoxin, injected into the veins, causes death in a short time, with marked hyperæmia of the mucous membrane of the stomach and the small intestine. 3. Small doses of this powerful toxin excite peristalsis and cause extensive intestinal hæmorrhages. The central cells show functional changes, while the parietal cells show degenerative lesions. 4. A serum specific for the peptic cells of the stomach of the dog produces extensive changes in the small intestine, while the colon is entirely unaffected, a phenomenon difficult to explain at present. (American Medicine, November 21, 1903.)

GONORRHŒA IN INFANTS.

Gonorrhœa prevails among infants and children to an extent not fully appreciated by the medical profession at large, and has become epidemic in institutions

where numbers of children are placed together. The ordinary clinical forms which the gonococcic infection assumes in children are ophthalmia, vulvo-vaginitis, and pyæmia. A series of cases of pyæmia reported occurred in infants, in whom no local lesion could be found to explain the mode of entrance of the organism to the general circulation. The suggestion is made that from a stomatitis due to the gonococcus such a systemic infection may arise. Gonorrhœal stomatitis in infants is a disease that needs further study. Only by careful exclusion, by microscopical examination, and by complete isolation can this disease be absolutely debarred from a hospital where infants are cared for. There is urgent need of public enlightenment on this subject. Those in charge of institutions for children, trained nurses, and even parents should be taught the frequency and virulency of this infection and the ease with which it is spread. It should be the duty of health authorities to include gonorrhœa among the acute infectious diseases of children. R. B. Kimball (Medical Record, November 14, 1903).

HÆMORRHAGE OF SPLEEN, SURGICAL TREATMENT OF TRAUMATIC.

The surgical treatment of traumatic hæmorrhage of the spleen naturally divides itself into: (1) splenectomy; (2) partial splenectomy; (3) splenorrhaphy; (4) aseptic tamponade; (5) cauterization; (6) marginal crushing and suturing.

1. Splenectomy.—Splenectomy is the operation of necessity in the treatment of traumatic hæmorrhage of the spleen, if the organ itself is diseased or in case the wound implicates the main trunk of the splenic artery. If the spleen is enlarged and softened, as is the case after acute infectious diseases, or in conse-

quence of chronic malarial intoxication, wounds cause very obstinate bleeding, which, owing to the textural changes which have taken place, resists all attempts at hæmostasis short of splenectomy. In such an event no time should be lost in the employment of conservative measures, and the diseased or wounded organ should be promptly removed. The same treatment is to be pursued if the wound involves the hilum of the spleen and its principal artery.

2. Partial Splenectomy.—If the lower part of the spleen has been extensively crushed or lacerated, or if a transverse wound has divided two-thirds of the diameter of the organ, removal of the injured or partially detached part of the spleen is indicated. The amputation should be done by the use of the crushing forceps, and after excision the crushed tissue should be covered with omentum, which is sutured over it with catgut sutures. Suturing of the omentum over the stump is an additional means of hæmostasis, and prevents harmful visceral adhesions.

3. Splenorrhaphy.—Suturing as a hæmostatic has had a fairly good record, and will be resorted to in appropriate cases. The mattress suture or shoemaker's stitch is best adapted for this purpose. A round needle armed with catgut is to be used for this purpose. Bleeding from the punctures is reduced to a minimum by using the double catgut suture, so as to tampon the tract made by the needle with the suture material, which soon swells by the absorption of moisture. After the hæmorrhage has been arrested in this manner, the cut surfaces are sutured together with a few separate catgut stitches. In bullet wounds a circle of through-and-through mattress sutures will usually succeed in arresting the bleeding. The bullet

wound itself in such cases should always be drained with aseptic gauze. If suturing is decided on, further loss of blood should be prevented by digital compression of the injured part of the spleen until the suturing is completed.

4. *Aseptic Tamponade*.—The aseptic tampon is often relied on by the surgeon in the management of troublesome parenchymatous hæmorrhage that cannot be controlled by more direct means, or when the source of hæmorrhage is not accessible to more reliable hæmostatic resources. In the case of wounds of the spleen this method of arresting the hæmorrhage meets a decided disadvantage in the absence of an adequate resistance to pressure. Notwithstanding the unfavorable mechanical conditions for effective tamponade, this hæmostatic agent has given satisfactory results in many cases of traumatic hæmorrhage of the spleen, in which it was relied on in arresting the bleeding. It will prove of value if relied on in bleeding from arteries of any considerable size: that is, in treatment of arterial hæmorrhage. The typical Mikulicz tampon is the one to be employed, as in this case the tampon can be removed with ease, and there is no danger of leaving a part of the tampon in the wound. The tampon also serves the useful purpose of a drain, and should be allowed to remain as long as it is deemed necessary to continue drainage. The size of the tampon can be diminished at any time it is considered safe to do so.

5. *Cauterization*.—The use of the actual cautery in the treatment of traumatic hæmorrhage of the spleen has an exceedingly limited sphere of usefulness, if any. It is not reliable, and may inflict serious damage on important adjacent structures. The eschar which it produces interferes seriously with an ideal healing of the visceral wound. For

these and other reasons it seems to the author that the actual cautery should be resorted to only in exceptional cases as a hæmostatic in the treatment of wounds of the spleen.

6. *Marginal Crushing of the Wound and Suturing*.—The most reliable procedure in arresting traumatic hæmorrhage of the spleen in all cases in which the wounded organ can be saved is marginal crushing, followed by suturing the crushed margins with catgut. The hæmorrhage is arrested the moment the forceps are applied, and the blood-vessels in the crushed tissues are speedily obliterated by thrombosis, thus guarding against recurrence of the bleeding, and by uniting the crushed wound margins by suturing with catgut the visceral wound is placed in the most favorable condition for speedy healing and regeneration of the tissues lost by the injury and the operative treatment of the wound. N. Senn (*Journal of the American Medical Association*, November 21, 1903).

HALLUX VALGUS.

Once having removed the infected bursa, the skin incision is made according to the method of Dawbarn, except in cases with a tender bursa. In these cases the bursa should be excised and as much of the overlying skin as is compatible with complete closure of the wound. The next step is to free the inner portion of the distal end of the first metatarsal with a chisel or periosteotome. The inner one-half or two-thirds of the head of the bone is then removed with bone-forceps. The outer one-third or one-half of the articular surface of the metatarsal and the phalanx are not disturbed. The extensor tendons of the great toe are then divided. The fascia and ligaments are then drawn together with catgut and the skin approximated with silkworm-

gut. The toe is held in proper position with a plantar splint and adhesive plaster. The author usually applied a constrictor before operating; but, without constriction, the hæmorrhage is slight. J. G. Sheldon (Medical Record, October 31, 1903).

HAY FEVER, A CLINICAL STUDY OF THE USE OF ANTITOXIN SERUM (DUNBAR'S) IN, DURING THE SEASON OF 1903.

As a result of researches extending over a period of seven years, Professor Dunbar, of Hamburg, has isolated a proteid substance from the pollen of rye, barley, wheat, and other gramineous plants which, when applied to the nasal mucous membrane and eyes of persons predisposed to hay fever, produces all the subjective and objective symptoms of the disease, while, when applied to individuals who are not predisposed, it elicits no morbid phenomena. He has also found that the pollen of roses, linden-flowers, wormwood, and many other plants which have been considered as giving rise to hay fever produces no symptoms when thus used. It is interesting, too, to note that the surfaces of the toxic pollen are absolutely smooth, a fact which proves that the disease is not the result of irritation produced by sharp pollen spicules. For the purpose of securing an antitoxin Dunbar injected the toxin into animals, but at first he found that their blood-serum intensified, rather than relieved, the condition produced by the toxin. Gradually, however, this property became weaker and weaker, and finally the serum assumed distinct antitoxic qualities. Thus, when mixed with equal parts of toxin, it was found to neutralize the specific action of the poison, and when applied to individuals who previously had been treated with the

toxin, it produced immediate disappearance of the subjective symptoms, and, after a few minutes, great amelioration of the objective signs. Dunbar's experiments comprise more than 30 tests, of which 9 were made on individuals who were predisposed to hay fever and the remainder upon those who had never suffered from the disease.

Sir Felix Semon, of London, and Dr. P. McBride, of Edinburgh, have repeated and corroborated these experiments. Their cases, combined, are 18 in number, of which 9 were in hay-fever subjects and 9 in control patients. Of the former, all but 1 gave typical reactions, while of the latter no symptoms followed an application of the toxin in any case. Their experience with the antitoxin was the same as Dunbar's. Emil Mayer, of New York, has also conducted a series of experiments and obtained reactions in all cases of spring hay fever, but no reaction in persons subject to the autumnal variety. Both the toxin and antitoxin used thus far have been prepared from maize, and, as Professor Dunbar has isolated toxic pollen from eighteen different grasses, it will be important to determine if all toxic pollens are identical, for, if such is the case, it seems possible that the specific treatment of hay fever may be realized.

Through the courtesy of Dr. Emil Mayer, of New York, the writer had the opportunity, during the summer months of the present season, of testing in his private practice the antitoxin serum of Dunbar in cases of hay fever. The author had no experience with the earlier attacks of the disease known as "blossom cold," "rose cold," etc. His observations extend over July, August, and September, and were confined to *periodical* attacks *only*; rhinitis vasomotoria periodica.

The writer had gone far in his study before he was impressed by the great latitude in public opinion as to what was to be called hay fever. Many cases coming under observation as hay fever were in no sense periodical in the summer months only, and not a few were composite, or mixed, cases, such as nasal polypi, nasal asthma, and chronic vasomotor rhinitis. He has limited his observations to such cases as could show summer periodicity, with a clear history of previous similar attacks, after these were reinforced by the history of heredity from one parent of similar attacks, and, chiefly, by finding all the clinical evidences in each case present upon *examination*, viz.: itching of nasal membrane, sneezing, itching of the conjunctival membrane and of the palate and fauces, spasmodic cough and asthma, as well as the intense nervousness and general lassitude often accompanying the attacks. Examination of the nasal cavities in the several cases showed the typical features present, such as a pale-gray, boggy, and leaking membrane, and the nasal cavities were often filled with watery seepage. Eliminating all but purely periodical autumnal attacks, which were always examined and the history taken, the writer began the treatment by the local application of the serum to the eyes and nasal mucous membrane by means of a pipette. To the conjunctival mucous membrane 1 or 2 drops were instilled from two to four times a day. For the nasal passages, from 2 to 4 drops were instilled into each nostril from two to six times a day. Fifteen cases were treated—all typical cases of periodical hay fever.

The writer then reports 6 cases to illustrate the effect of the serum treatment. In the 15 cases in which the writer made his clinical experiments, the effect was

promptly manifested and the relief complete. Such deep disappointment has heretofore been experienced in our trials of various methods of cure—surgical and medicinal—that the writer was, to say the least, not enthusiastic concerning results; but he can truthfully say that he believes that no such advances have ever been made in the treatment of hay fever. Alexander W. MacCoy (New York Medical Journal and Philadelphia Medical Journal, November 21, 1903).

HEAT AND COLD APPLIED TO THE SPINAL CORD, THE THERAPEUTIC VALUE OF.

Nothing should ever be put into the stomach except such substances as form a component structure of the body. If this rule is rigidly adhered to, there should be no digestive disturbances, and everybody would have normal blood. Since the blood is the life, when the blood has its structural elements normal and every cell is receiving its proper supply, no more, no less, disease cannot occur. Since it is known that the amount of blood in any part is controlled by the action of the vasomotor centers of the spinal cord and the sympathetic ganglia in close proximity to the cord, when these centers are performing their functions properly the blood-circulation must be normal and no disease can exist. When any disease is present causing an increase of blood in the capillaries of an organ, the application of heat over the vasomotor centers presiding over that organ causes almost at once a normal flow of blood in them, and consequently a normal circulation in the organ affected. When there exists any disease which lessens the normal amount of blood in any organ, then the application of ice over the vasomotor centers presiding over that organ will cause a normal amount of

blood to flow to it, resulting at once in a normal circulation and a consequent subsidence of the disease. W. F. Glenn (Transactions of the Mississippi Valley Medical Association; New York Medical Journal and Philadelphia Medical Journal, November 21, 1903).

HIP-JOINT DISEASE, OPERATIONS IN.

The following are the chief points to be attended to in operations for tuberculosis of the hip-joint: All diseased bone and *débris* should be thoroughly cleared away. All existing portions of periosteum should be carefully preserved. The periosteum should be stretched along the track of the old bone and attached to the periosteum of the lower margin of the acetabulum. The muscles and fibrous tissue should be stitched over the periosteum. The leg should be stretched full length and fifteen to twenty pounds' weight applied for extension. The wound should be allowed to heal by granulation. The patient may be permitted to sit up in bed two weeks after operation. The weight should be kept on for four months, or a Thomas splint used and the patient allowed up after six weeks. The patient should not be allowed to walk for six months. R. P. Robinson (American Medicine, November 14, 1903).

HYDROPHOBIA.

The writer relates two cases he has seen at Bellevue Hospital, which were supposed to be rabies, and also speaks of the death, within a period of three or four months, of 24 out of a flock of 48 sheep on a farm, which had been bitten by a rabid dog. It seems to him that there are only two things which may be mistaken for hydrophobia, namely: (1) tetanus and (2) nervous exhaustion from fright (lyssophobia). As regards

tetanus, he does not know of any case of the disease occurring where all signs of traumatism have disappeared for a considerable time. It is unfortunately the case that a dog which has bitten one or more persons is generally killed immediately, instead of being kept shut up under observation. In this way it is often impossible to say whether a dog has rabies or not, and those who have been bitten are thus apt to become the victims of their own terrors. The writer, therefore, considers it a crime to kill a dog under these considerations, and would have it made a State prison offense. He cannot doubt that there is really such a disease as hydrophobia, and repeats that instances of it are recorded in medical literature. Children have suffered from it who are too young to be affected with lyssophobia. Again, the inoculation from the medulla of animals and the re-inoculation to the third or fourth series seems to establish its entity on a scientific basis. A. H. Smith (Medical News, November 21, 1903).

HYPERTROPHIED PROSTATE, RADICAL TREATMENT OF.

The direct method should first be employed; if this fails, resort should be had to operation on the testicles or the vasa deferentia. The operations making a direct attack upon the enlarged prostate gland are preferable to those aiming to exert an indirect influence. We have *two* useful procedures for the direct treatment of the enlarged prostate gland—i.e., prostatectomy and galvano-caustic prostatotomy (Bottini's operation). In selecting the method indicated in the given case we must individualize and be guided by anatomical, pathological, and social conditions. Prostatectomy is the most radical and most surgical procedure; it should be the

operation of choice whenever promising success. Perineal prostatectomy offers advantages over the suprapubic method, since it enables the operator to do the operation under the guidance of his eyes. Debilitated patients who seem unfit subjects for the more radical operation, should not be at once relegated to catheter life, nor should prostatectomy be performed in order "to let them down easy"; they should be advised to have Bottini's operation done if possible. Surgeons should familiarize themselves with both methods, in order to be in a position to do justice to their patients. It is the duty of those refusing to do Bottini's operation under any circumstances nevertheless to advise the latter in cases in which the patient asks for more radical relief and the operation with the knife seems contra-indicated. Further carefully compiled statistics as to the late results of both operative procedures—preferably in the hands of one man—are desirable in that they will increase our knowledge with reference to the selection of the proper method in the individual case. W. Meyer (*Medical Record*, October 24, 1903).

IODINE REACTION.

This reaction is always present in the following conditions: Lobar pneumonia, broncho-pneumonia, cerebro-spinal meningitis, influenza, empyema, suppuration (nontuberculous), and is found present in single cases of appendicitis, diphtheria, and starvation. The reaction is usually present, but may be absent in cases of typhoid fever and miliary tuberculosis. The reaction may be absent or present in anaemia. It is usually absent, but may be present in nephritis, cardiac valvular disease, and tuberculosis. The reaction is absent in pleurisy with effusion, functional indigestion, rachitis, articular

rheumatism, congenital cardiac disease, chorea, infantile atrophy, and is found absent in single cases of bronchitis, eczema, purpura, urticaria, and scorbutus. C. H. Dunn (*Boston Medical and Surgical Journal*, November 5, 1903).

LACERATED CERVIX, REPAIR OF.

Immediate repair of the cervix is indicated only in exceptional cases aside from the control of hæmorrhage. Mediate repair (during continuance of lochia) is contra-indicated, except it be in some unusual case. Secondary repair is indicated as soon as symptoms are definitely due to the laceration, such symptoms failing of relief by palliative measures or recurring after apparent palliative cure. Operation should be prompt, not necessarily early. Operations on women past 35 give better permanent results than in younger women. Repair of the cervix is indicated as prophylactic of malignancy in a woman approaching the cancer age if the cervix manifests locally evidence of cellular irritation, whether or not causing subjective symptoms. Lacerations in which operation is not indicated should be kept under close observation as the cancer age approaches. Obstetricians are obviously unable to avoid lacerations of the cervix in many cases, but if the above deductions are correct a far more strict asepsis will, by favoring spontaneous primary union of such lacerations, do much toward lessening the number of secondary tracheloplastic operations. D. H. Craig (*Journal of the American Medical Association*, October 31, 1903).

LEPROSY.

The prevailing opinions in Hawaii regarding the disease are summarized as follows: The bacillus lepra is the cause

of this disease, but it is feebly contagious. The Hawaiian is peculiarly susceptible to leprosy, while the Caucasian possesses a high degree of immunity. Syphilis predisposes to leprosy, but heredity is a factor of but little importance in the causation of this disease. Segregation prevents the spread of leprosy. The precise manner in which this disease is ordinarily transmitted from the sick to the well has not been proved. Benefit may be derived from good hygiene, good food, climate, hot baths, and the antiseptic treatment of ulcerative surfaces. Judson Daland (*Journal of the American Medical Association*, November 7, 1903).

LEUCOCYTES AND MEDICINES.

Labbé (*Presse Médicale*, October 17, 1903) points out that, since Metchnikoff proved that the principal function of the leucocytes was the absorption and digestion of foreign bodies, study has shown the capital importance of these bodies in the organism. They not only destroy what is harmful, but help to assimilate food and medicine. Centrifugation of the blood after hypodermic injection of poisons shows that the leucocytes contain most of the poison. They take up iron, but little of which is excreted by the kidneys and liver. Insoluble medicines are absorbed and rendered soluble by the leucocytes. Iodine, arsenic, iodoform, mercury, and sodium salicylate are all taken up by these cells and may or may not enter into a true chemical combination with them; possibly the medicines are carried to a pathological lesion by a process of election in this manner: *e.g.*, mercury to syphilitic eruptions. (*New York Medical Journal and Philadelphia Medical Journal*, November 21, 1903.)

MODERN AND OLD SURGERY.

A contrast of the modern and the old surgery will show as great advances both in scientific and practical features of the work as has been made in any of the other numerous paths of human efforts in which there has been such active progress of recent years. Within that period the great discoveries of anæsthesia and antiseptics have been developed and put in use in such a way as to make possible all the operations of abdominal and brain surgery, as well as making successful nearly all forms of intervention which previously were either impracticable or extremely dangerous. In an address at the memorial meeting to Dr. John Homans, of Boston, E. H. Bradford referred to the development of surgery during the time of Dr. Homans's practice, and the part which he had in the development of abdominal surgery. A few paragraphs of his address bring to us vividly the condition in those earlier times: "Time has done honor to the bold efforts of the pioneers in abdominal surgery and their successes, and it has laid the hand of oblivion on the ghastly failures of many early and injudicious followers in the movement. If the truth were told it would not seem strange that the conservative surgeons of the pre-antiseptic days hesitated in giving their sanction of approval to the rashness which was usually death-dealing. Owing to conservative traditions, Homans was not cast out among the barbarians in surgery, who injured their calling by recklessness, and who seemed to calmer members of the profession surgical buccaneers without skilled training, licensed thugs, cajoling the public and boasting of their few successes, oblivious of their many failures. Fortunately this feature of surgical practice is now forgotten, only a few remembering its menace to the

credit of our profession. It is to the lasting honor of Dr. John Homans that, while he was foremost in the movement which advanced surgery, he avoided rash excess of operative zeal, and learned and taught the lesson of careful preparation and thoughtful undertaking. At that time a surgical procedure was a personal feat; the surgeon like a toreador, matched his courage, energy, and dexterity in an event. It was largely an attempt of the amphitheater in the mind of the surgeon, even if the spectators were few."

Dr. Homans has lived to see surgery developed into a science—careful, painstaking, often wearisome to the spectators, rarely spectacular, as beneficial as it is laborious. Even at present the importance of careful preparation for a surgical career is often underestimated. Too many take up surgical work without anything more than a year or two of general hospital experience, and gain most of their surgical experience at the expense of their patients. The careful, painstaking, modern surgery at its best is not generally enough accepted; too many give undue importance to speed in operating and not enough to care in antiseptics, which should in every way equal the painstaking work of the bacteriological laboratory; to careful, clean work; dissections rather than rough separating bruising of tissues; to care in saving blood, that most valuable, vital fluid, even at the expense of a little extra time. We might each one of us ask himself, with profit, in how far we are following the old, theatrical method of operating,—inherited from our surgical ancestors for so many generations,—and in how far we are following the more truly modern, scientific, life-saving surgery. Tinker, Craig, and Orr (Editorial in *American Medicine*, November 28, 1903).

NERVES, EFFECT OF LIGATION UPON THE VITAL STAINING OF.

Dr. Meltzer's demonstration of the effect of ligature upon the circulation in sciatic nerves is an eminently practical demonstration of the influence of the peripheral circulation on the nervous system. When a single ligature is applied to the sciatic nerve and methylene blue is injected intravenously into the animal, the nerve becomes completely stained, just as if there were no ligature. When two ligatures are applied, however, some distance apart, then the portion between the ligatures does not become stained blue, though the peripheral portion of the nerve beyond the external ligature and the proximal portion inside of the internal ligature do become colored. It is evident, then, that a considerable part of the circulation of nerves is derived from the periphery of the body. No matter how distant from one another ligatures are applied along the trunk of a nerve like the sciatic, no staining is found between the ligatures. Therefore, when any pathological condition causes a lessening of the circulation in the skin and outlying portions of the body, nervous nutrition must suffer. This explains why hydrotherapy, massage, gentle friction of any kind, and even the application of mild counterirritants is effective in producing distinct changes for the better in the peripheral nervous system. (*Medical News*, November 21, 1903.)

PNEUMONIA AND TUBERCULOSIS, THE RELATIVE IMPORTANCE TO THE COMMUNITY OF.

The relative economic importance of pneumonia and tuberculosis cannot be estimated by a mere comparison of total mortality figures for each disease. The high mortality figures and its increase, of

late, for pneumonia is produced by the enormous death-rate and its increase, attributed to this disease, in early childhood. Therefore the high mortality from pneumonia, and to a certain extent its increase, are due to a classification of different ill-defined pathological conditions under one name, while that from tuberculosis represents that of a well-defined morbid entity. For this reason, and on account of the relative shortness of disabling sickness and frequent recovery in pneumonia, the great length of disabling sickness and infrequent recovery in tuberculosis, the relative importance of the two diseases is so vastly different that a comparison on economic grounds reveals the overpowering danger from tuberculosis. The steady decrease of the death-rate of tuberculosis can be explained on the grounds of increasing improvement of hygienic conditions in late years and as the result of specific prophylactic measures. The increase of the death-rate of pneumonia occurring in a time of improving hygienic and sanitary conditions and of a general application of antiseptic principles shows its independence of these features. Therefore, and in view of the still enormous mortality from tuberculosis, its demonstrated preventability and the possibility of its arrest only in its earliest stages, the institution of educational measures in regard to personal and public hygiene widely and specifically applied, for the prevention of this disease, seems to be distinctly indicated. Since for pneumonia, as pointed out by E. F. Wells, "the fundamental information on which prophylactic rules may be formulated is not yet at hand," this subject needs further investigation from a bacteriological and epidemiological standpoint as well, before "exaggerated and irrational notions in regard to its dangers and its

avoidance" are communicated to the public, which, in view of the facts given, are out of all proportion. A. C. Klebs (Medical News, November 21, 1903).

PYOSALPINX.

The steps of this operation as carried out by the author are as follows: "After the abdominal incision has been made, first see if it is possible to push the intestines upward toward the diaphragm, and hold them by packing in gauze sponges; second, seek the fundus of the uterus. Having made way to the uterus, gradually insinuate the finger along the posterior surface until the *cul-de-sac* has been reached. Carry a gauze sponge down between the fingers and the uterus. From this point of cleavage separate adhesions from the center as much as possible, gradually filling with the gauze sponges the space made. As fast as possible separate adhesions of the intestines and push them back toward the diaphragm until they are well out of the way and a thick wall of gauze sponges separates the field of operation from the general abdominal cavity. Now gradually separate the adhesions, holding down the tubes, and lift the uterus as high as possible with vulsellum forceps. . . . The first step in the actual operation is to excise the tube by a V-shaped incision in the cornu of the uterus. . . . Follow this up with a continuous catgut until the V-shaped incision has been almost closed. Put down this needle and thread; lift the tube as high as possible; ligate the web or ligament of the tube in three or four different sections with catgut, as close as is consistent. A certain amount of comparatively healthy and active ovarian tissue may be found at the base of almost every ovary, no matter how cystic. Remove all the cystic portion, making, if possible, a

V-shaped incision, which is to be closed with a very fine catgut. . . . Now take up the needle and continuous catgut suture which has been used to close the V-shaped uterine incision, pass the needle through the peritoneum just external to the line of stumps, then the side of the uterus, then through the peritoneum, back to the side of the uterus, and so until the peritoneum forming the web or ligament of the tube has been brought in contact with the side and back of the uterus. After this has been done it is found that the raw stumps are hidden and in contact with the back and side of the uterus. The ovary is suspended by its normal ligament under a roof made of the peritoneum of the broad ligament, and is thus protected from contact with the intestines above. The other tube and ovary are treated likewise. Owing to the fact that very many of these cases tend to retroversion of the uterus, I have supplemented this part of the operation by what I have called, for want of a better name, 'posterior advancement of the round ligament,' which is done by seizing the round ligament an inch or an inch and a half from its uterine attachment and bringing a knuckle backward to be stitched to the posterior and lateral surfaces of the uterus and broad ligament by a line of catgut sutures. This holds the uterus in its normal position. In the great majority of cases every raw surface may be covered up by this method. If there should be infection of the ovary or in the stump following the operation, there is but one place for an accumulation to take place, namely: in the *cul-de-sac*, where it will do the least possible damage and be most easily reached."

Drainage is unnecessary except in acute cases, the pus being generally sterile. When required, drainage through

the *cul-de-sac* should be resorted to, using the compound drain of rubber tube and gauze. The advantages of the author's method are as follows:—

1. Small mortality. 2. The covering of every raw surface with peritoneum as far as possible, and directed so that drainage will be into the *cul-de-sac*. 3. Future complications and adhesions are almost altogether prevented by exsecting the tube from the cornu by a V-shaped incision, suturing the incision with catgut, and bringing the peritoneum of the broad ligament and the stumps in contact with the uterine body. This turns the ovary and raw surfaces into the *cul-de-sac*, sheltered by overlying peritoneum, and all broken areas are brought into the *cul-de-sac* within easy reach in case of infection of either the uterus or remaining ovarian tissue. 4. Owing to the tendency of the uterus to be drawn backward by adhesions, the posterior advancement of the round and broad ligament serves a valuable purpose. 5. No vessel is tied which under ordinary circumstances could cause fatal hæmorrhage, even though all ligatures slip. 6. All the normal womanly functions except childbearing can be kept up in almost every case. R. C. Coffey (*Annals of Surgery*, October, 1903).

RESPIRATORY RHYTHM.

The author studied the sources of disturbance to the respiratory rhythm, taking up the various phases of the subject under the following heads: Emotion dyspnœa; defensive rhythm—as illustrated by the deep inspiration and violent expiration taking place when a foreign substance is to be expelled by sneezing and coughing; chemico-mechanical, in which mechanical causes of any nature lessen the ingress of oxygen and induce an accumulation of carbonic acid;

and chemical rhythms, having their origin in autoinfection, as illustrated by the reflex dyspnoea due to diseases of the digestive tract. The author believes that the emotion rhythms afford practical proof of the existence, not only of bulbar and spinal respiratory centers, but also of cerebral respiratory centers. He holds that the involuntary respiration occurring under normal conditions and presided over by the bulbar respiratory center becomes modified under the influence of psychical emotion; and that such modifications have their origin within the motor area of the cerebral cortex. D. A. Espina y Capo (New York Medical Journal and Philadelphia Medical Journal; from *Revista de Medicina y Cirugia Practica*, October 14, 1903).

SMALL-POX, ORGANISM OF.

Dr. Calkins's discussion of the small-pox organism seems to demonstrate that the appearances observed in small-pox cases are those of a protozoan parasite, since the different stages of the organism have been definitely recognized by him. A very interesting sidelight on small-pox is thrown by the demonstration of a corresponding parasite in certain forms of paramacium. This is a very common lower organism which exists in abundance in pools and swamps, and may even be found under certain circumstances in ordinary drinking-water, and it is not impossible that it may prove to be the host of the small-pox organism outside of the human body. Now that the secondary hosts for malaria and yellow fever have been demonstrated, it may be expected that such important steps in biology will be made with quite as beneficial effects in practical medicine. If this special bit of progress should come for small-pox next it would indeed be an important advance for sanitary science, and prove of

the greatest possible benefit to the race. (Medical News, November 21, 1903.)

SPINAL SUBARACHNOID COCAINIZATION.

The writer adduces evidence to show that the method is as safe as, if not safer than, general anaesthesia; that we may safely employ up to $\frac{48}{100}$ grain of cocaine without fear of toxic effects; that shock, when present, is decidedly less than that of general anaesthesia; that it is attended with less danger of annoying sequelae and symptoms; that, on account of the variability in the length of its analgesic action, it is contra-indicated in prolonged procedures.

The technique of the operation is comparatively simple, and can be applied by anyone of even ordinary surgical ability. It may, perhaps, be apropos briefly to review here the steps in the procedure.

The needle advised by Tuffier is of platinum with a short bevel. The one employed by the writer is an ordinary steel aspirating needle, ground to a short bevel. It must be sufficiently long to penetrate easily the space between the skin and subarachnoid space.

The writer has used a 2-per-cent. solution, which seems to be the universal one. Part of this solution was prepared for the author by Dr. Frank Hall, the cocaine being first sterilized by the dry method in small tubes, the solution being made by the addition of sterile, freshly distilled water, the tubes then being sealed by heating and drawing out the glass. Such sterile glass tubes contain 30 minims each. Put up in this form, it seems to keep indefinitely. The syringe is an ordinary solid-piston metal one, which can be boiled.

The patient is prepared as for general anaesthesia and the skin over the area of puncture is well scrubbed, and an antiseptic poultice placed over it the

night before operation, to assure an aseptic field.

The tube of cocaine is placed in a formalin solution of sufficient temperature to bring the inclosed cocaine solution to about body-heat. The hands of the operator are sterilized thoroughly and the field of puncture is again scrubbed. The tube of solution is broken and 15 minims are drawn up into the syringe, which has been boiled.

The patient is seated on a stool and told to bow the back strongly. The fingers of the left hand locate the fourth lumbar spine, which lies on a level with the iliac crests, and the injection is made either above or below this landmark: *i.e.*, in the space between the third and fourth or between the fourth and fifth lumbar vertebrae. The needle, grasped in the right hand, punctures the skin a little below and a little to the right of the spine selected, and is made to take a direction slightly upward and inward. It is pushed in slowly, and, if a bone is impinged upon it, is withdrawn slightly and the direction modified. The intervertebral ligaments offer a slight obstruction to the needle, so that when the canal is entered there is a sense of diminished resistance, by no means always followed by a flow of cephalo-rachidian fluid, and the operator must not be misled into injecting the solution on this evidence alone. The only positive proof that the arachnoid space has been entered is the issuance of the cerebro-spinal fluid, drop by drop, from the needle; and then, and not till then, should the injection be made.

The amount of fluid allowed to escape through the needle should equal the amount of cocaine solution we intend to inject. The syringe is then attached and the injection made. Morton modifies this method by drawing the fluid

direct from the canal into the syringe, in which are placed the requisite quantity of sterile cocaine crystals. Whether the injection is made slowly or rapidly has seemed to make no difference, operators differing as to this point. For securing analgesia above the diaphragm, Morton makes the injection rapidly.

The needle is now withdrawn and a piece of sterile gauze fastened over the point of puncture by adhesive straps. The patient is now allowed to sit up straight, and so remain for a few minutes. If analgesia above the diaphragm (the writer recently had a case in which there was perfect analgesia above the diaphragm, but absolutely none below) is required, it is best that the patient assume a reclining position immediately following the injection, to favor a diffusion of the cocaine solution, as the specific gravity of the cocaine solution is greater than that of the rachidian fluid. In cases where the recumbent position is enforced, the patient can be placed on his side and the back bowed, the injection being made in this position.

Analgesia is complete in about eight minutes, usually about the time required to get the patient ready for operation, and the surgeon can proceed in perfect assurance that pain perception has been destroyed. Contact-sense is not destroyed and, in one case of the author's series, the patient retained the perception of heat and cold. E. G. Mark (*New York Medical Journal and Philadelphia Medical Journal*, October 31, 1903).

STOMACH, CHEMISTRY OF, AFTER THE USE OF CERTAIN DRUGS.

After a comprehensive study of the effects of various drugs on the chemical composition of the gastric juice in diseases of the stomach, the writer concludes: In diseases of the stomach the

free hydrochloric acid and the ferments do not act alike, and the behavior of pepsin and of rennet only is identical. In Reichmann's disease, while the increase of acid will also increase all the ferments, the decrease of acid on injecting atropine will not increase the ferments. In both chronic gastritis and in hypochlorhydria of nervous origin, the ferments may be present in normal amounts. In carcinoma of the stomach the ferments may persist for a long time in normal amounts, while the acid secretion is diminished at a much earlier stage. The use of strychnine is beneficial in chronic gastritis and in hypochlorhydria of nervous origin, in order to stimulate the secretion of acid, but it has no effect on the ferments. The hypodermic use of atropine and of strychnine in diseases of the stomach is of no avail practically, while pilocarpine may be given either by mouth or hypodermically with equally good result. Pilocarpine increases the amount of acid secreted, but has no effect on the ferments. The author does not think that bitter tinctures, alkalies, alcohol, etc., in small amounts can have any influence on the chemical composition of the gastric juice. The effect of daily washing of the stomach is to diminish the total acidity of the contents, but it has no effect on the proportions of hydrochloric acid and of ferments. D. Pirrone (*Riforma Medica*, August 12, 1903).

SURGICAL SHOCK, TREATMENT OF, BY ADRENALIN.

The toxic dose for man is not known, but is probably several hundred times greater than that in which the drug is ordinarily given.

Because of the rapidity with which it undergoes alteration in the body, it is inert in so far as its systemic effect is

concerned when given either by the mouth or by the rectum.

Because of the tendency to abscess-formation at the seat of injection incident to the ischæmia caused by strong solution, the dilution should be at least 1 to 10,000 when the drug is given hypodermically. Nor does it seem probable that any effect can be expected, when thus administered, from less than 2 cubic centimeters of the 1 to 1000 solution. Apparently, it is safe to give an initial dose of 10 cubic centimeters of the strong solution in 90 cubic centimeters of normal salt.

In cases of urgency adrenalin chloride should be given intravenously in a dilution of 1 to 10,000. The injection should be slow, thus prolonging the effect of the drug, and should be pushed up to 100 cubic centimeters of the strong solution or until the heart clearly and unmistakably responds to its influence.

There is as yet no convincing clinical proof to the effect that the drug is as efficacious when used on man as laboratory experiments would lead us to suppose.

Because of its power of lessening the bacteriolytic power of the blood of animals, its use in cases of infection in the human should be practiced with great caution until a wider experience has proved its safety or danger in these cases. Clinical evidence strongly suggests that it exerts a similar power upon the blood of man. Edward Martin and M. E. Pennington (*American Medicine*, November 21, 1903).

TETANY, PATHOLOGICAL ANATOMY OF.

The author announces that the histological study of eight cases of tetany has shown that it is an organic affection, the lesion consisting in an interstitial neuritis or ganglionitis. The part affected is

the extradural connective tissue, and the lesion is a small-celled infiltration with hæmorrhages or fibrinous deposits, or a jellylike infiltration into the epidural tissue. This interstitial neuritis affects both motor and sensory nerves in their extradural portion. The intradural and intramedullary portions are free from it, and also the peripheral nerves. The ganglionitis may assume the form of proliferation of the intracapsular endothelium or of infiltration of round cells into the stroma of the ganglion, or of degeneration of the protoplasm of the nerve-cells with karyolysis. The process involves the nerve-roots innervating the parts that are the seat of the muscular spasms. The latter are not merely root symptoms from inflammatory irritation of the motor nerves, but are principally due to this pachymeningitic inflammation in the sensory sphere and exaggerated excitability of the motor nerves. This overexcitability of the motor nerves is the result of mechanical compression of the motor fibers in the root-region by the products of the inflammation. As the openings in the dura and between the vertebræ are about of a constant size, the effect of these local pathological processes is most marked, the larger the size of the emerging nerve-roots with their vessels. As the seventh and eighth cervical roots and the lowest lumbar and upper sacral roots are the thickest, the parts innervated by these roots suffer most from the effects of the lesions. Trousseau's sign can likewise be explained by this compression of the roots and vascular congestion with the entailed overexcitability of the nerves involved. The author adds that he has noticed a new phenomenon characteristic of tetany, constant in seventy-eight cases examined. He calls it the "jumping-jack sign." If the anode of a current of 3 or 4 milliampères is placed on the breast,

the cathode on the spine near the fifth to seventh cervical vertebræ, the arms jerk like those of a jumping-jack when the string is pulled. The legs jerk in the same way if the electricity is applied lower down, and on one side alone if applied to one side of the median line. This jerking is evidently due to overexcitability of the nerve-roots. R. Peters (Journal of the American Medical Association; from *Deutsches Archiv für klinische Medizin*, vol. lxxvii, Nos. 1 and 2, 1903).

TOXINS, MODE OF ACTION OF ANTITOXINS ON.

Bordet (*Annales de l'Institut Pasteur*, November 3, 1903) considers that the fact that antitoxin counteracts toxin in virtue of direct combination is settled, but that the exact nature of the reaction remains to be defined. It has been shown that the absorption of an active principle of the serum by the attracting substance of cells does not obey a law of constant proportion, varying with the conditions of experiment, and the process has been compared to the absorption of colors. Some have considered the process purely mechanical (surface adhesions, etc.); but this is not justified; that in the case of sera and sensitive elements true affinities come into play is indicated by the principle of specificity.

What are the conditions of combination of toxin and antitoxin? It is known that an exact quantity of antitoxin is necessary to neutralize completely a given quantity of toxin. To those who admit the direct action of toxin and antitoxin this is not a matter of surprise. Ehrlich has, however, drawn attention to a certain phenomenon. Supposing a given quantity of antitoxin is necessary to neutralize 100 lethal doses of toxin, if 101 lethal doses

are employed in the mixture, the animal should die; but this does not occur, and, in fact, the quantity of toxin may be greatly superior without the mixture being lethal. This seems to point to the possibility of toxin and antitoxin being combined in variable proportions. It is evident that, according as one adopts the view of the combination of toxin and antitoxin in fixed proportions, or that of the union of the two in variable proportions, one will be led to attribute to the mixture of toxin and antitoxin distinct compositions. In the first case, we should have to consider that the mixture contains two substances—toxin free and active and toxin saturated and harmless; in the second case, we should have to suppose that the mixture contains only one substance—toxin incompletely saturated and simply attenuated.

The phenomenon of Ehrlich is quite explainable if the idea of the combination in variable proportions is accepted. Ehrlich explains the phenomenon differently; he supposes that a toxic bouillon is complex, and contains several poisons, some very active,—the toxins, properly speaking,—and some less active,—the toxones. The molecules of toxin and toxone absorb equal quantities of antitoxin, but the toxin attracts more antitoxin than the toxone; if to a completely neutralized toxic bouillon more toxin is added, he supposes that the new toxin seizes on the antitoxin which is in combination with the toxone, and in the new mixture any free toxic material is of the nature of toxone, and relatively inoffensive. In this explanation the existence of several factors—for example, the toxones—is hypothetical.

Bordet has studied the question in relation to the mode of action of antialexin on alexin; his experiments have been carried out by the admixture of sera

containing these two bodies, using red cells mixed with alexin-free hæmolytic serum as an indicator. These antagonistic sera exhibit the phenomenon of Ehrlich, but the hæmolytic test showed that the antialexin is distributed over the whole of the alexin present in a mixture of the two sera; it does not neutralize completely part of the latter without affecting the excess, and the explanation of Ehrlich does not offer a proper interpretation of the phenomenon. In each mixture of alexin and antialexin a new body is formed, a complex of two antagonistic substances whose composition depends on the proportion of the two elements. The antialexin attenuates the alexin, and if the dose of the former is increased this attenuation progresses up to complete abolition of toxic activity. There is no fixed relation of combination, and the proportions are variable. If this view be grasped, certain known, but enigmatic, matters become intelligible; for example, a mixture of toxin and antitoxin inoffensive to one species may manifest a definite toxicity to another species. According to the view of variable combination, a mixture of toxin and even a small dose of antitoxin does not contain any toxin in its primitive condition, but is a complex (attenuated toxin), which is a new body with characteristic properties. It is natural to suppose that its toxic power may be sufficiently attenuated to produce no effect on some species, while other species will show a real sensibility to its action. It is also possible to suppose that a toxin, even if entirely saturated with antitoxin, may still be poisonous to some species and some individuals; according to this view, there is no radical difference between attenuation and neutralization of toxin except one of degree. (*British Medical Journal*, November 14, 1903.)

TUBERCULOSIS, ANALYSIS OF FIFTEEN HUNDRED CASES OF.

The writer gives the following summary of results in 1500 cases: In all, 497 (33 per cent.) cases were alive, 569 (38 per cent.) were dead, and 444 (29 per cent.) untraced. Of the 497 patients that were alive, 329 (22 per cent.) were well; 69 (4.6 per cent.) were arrested; 44 (3 per cent.) relapsed; 55 (3.7 per cent.) were chronic.

If the 434 untraced cases are deducted there are left 1066 cases which have been traced. Of these, 31 per cent. were well; 6.5 per cent. were arrested; 4 per cent. had relapsed; 5.2 were chronic; 53.3 per cent. were dead. Deducting from the number of incipient cases those that had been untraced, there are left 258 cases. Of these, 66 per cent. were well and 21 per cent. dead. Of the 563 advanced cases which had been traced, 28.6 per cent. were well and 52 per cent. dead; while, of the 235 far-advanced cases which had been traced, 2.5 per cent. were well and 90 per cent. dead. It must be remembered, however, that these figures are only approximately correct, as no doubt more of the untraced cases are dead than these figures would indicate. Lawrason Brown (*Journal of the American Medical Association*, November 21, 1903).

TUBERCULOSIS, ORAL AND RECTAL TEMPERATURES IN STUDY OF.

Temperatures carefully taken in the mouth during rest form a reliable guide in the management of phthisical cases under conditions of sanatorium life. Temperatures taken in the mouth during or shortly after exercise cannot be considered trustworthy unless registered with such precautions as militate against their general practical applicability. Temperatures taken in the rectum dur-

ing rest, generally speaking, register higher than in the mouth, but do not otherwise usually afford any special assistance in the management of phthisical cases. Temperatures taken in the rectum during or shortly after exercise, in both healthy and phthisical subjects, register a temperature considerably higher than that in the mouth, and, while in the nontuberculous the return to normal is more rapid than in the tuberculous, no special direct advantage for the phthisical appears to accrue from this method. For practical purposes in the management of phthisical cases undergoing the so-called sanatorium treatment the registration of temperature by the oral method, when taken during rest and with due care, affords reliable guidance. T. N. Kelynack and S. R. Williams (*British Medical Journal*, October 24, 1903).

TYPHOID FEVER AND IMPURE ICE.

Since the usual source of infection in typhoid fever has been discovered, it has been natural that from time to time considerable attention should be paid to the possibility of the transmission of the disease through ice formed from contaminated water. It will no doubt be remembered by some readers that an investigation of the Boston ice-supply, conducted under the auspices of the Board of Health, was published in the *Boston Medical and Surgical Journal* in 1901, with the general conclusion that ice more than three weeks old is practically as safe as a well-filtered water-supply. Inasmuch as infection, if it occurs from ice, would naturally follow the cutting, it was held that after March the ice could not be held responsible for an outbreak of the disease, even were it known originally to have been infected. As a matter of fact, on analysis very few cases of the disease have been shown to

be due to ice. This renders a careful piece of work on the subject by Dr. R. H. Hutchings and Dr. A. W. Wheeler, of the St. Lawrence State Hospital at Ogdensburg, N. Y., published in the current issue of the *American Journal of the Medical Sciences*, worthy of comment.

The tracing of an epidemic of typhoid at the St. Lawrence Hospital by these investigators certainly seems to indicate that under favoring conditions ice may be the source of the disease. Formerly the hospital was supplied with drinking-water through the St. Lawrence River, but this, having been definitely shown to be the source of very considerable epidemics of typhoid, was abandoned after various measures for purification had been investigated. Thereafter water was obtained from a small Adirondack stream, which supplied the city of Ogdensburg. This change led to a practical disappearance of the disease for about two years, and during this time the water was not boiled and ice was freely used. In the latter part of 1902 typhoid fever again appeared, and after a careful investigation of the water and milk supplied it was determined that the ice used in the institution was the probable source of infection. This ice had been taken from the St. Lawrence River and had been stored more than seven months. It appears that when this particular ice was forming, three or four cases of typhoid fever had occurred in the city among users of well-water. Ice cut from the same place had previously been used for upward of ten years and had never before been suspected. Bacteriological investigation of specimens of drinking-water and melting ice were undertaken by Dr. George Blumer, of the Bender Laboratory in Albany, whose report led to the strong suspicion that

the ice was at fault. Further careful investigation brought out the fact that the ice, which contained considerable extraneous matter, was contaminated with numerous organisms, many of which were motile. Cultures showed a rapid growth, and colonies of colon bacilli and typhoid bacilli were finally isolated. The tests applied in the case of the suspected typhoid organisms left no doubt in the minds of the observers that they were dealing with *Bacillus typhosus*. In three of the cases the disease was clinically identified by autopsies. In further support of the contention that ice was the source of the infection is the fact that with the discontinuance of the use of this ice the epidemic slowly subsided. There were in all thirty-nine cases. At present, with the exception of a different ice supply, the conditions are the same as at the beginning of the epidemic. The water used is not boiled.

This piece of careful work should be widely read. It is apparently a justification for the opinion, long theoretically held, that under certain favoring conditions ice may be a definite and dangerous source of typhoid fever, and should lead to definite precautions against the spread of the disease from this source. Although the work of the Boston Board of Health was apparently conclusive, so far as it went, this new experience at Ogdensburg should suggest further experiment in which the natural conditions are so closely simulated as it is possible to make them under artificial experimental conditions. *Editorial (Boston Medical and Surgical Journal, October 8, 1903).*

URETHRAL TUBERCULOSIS.

General measures are likely to give the best results. Camping by the sea-

shore is, in the author's opinion, of the greatest benefit. It has, also, the great advantage of cheapness. Local treatment, unless specially called for, is of questionable utility. Injections of silver nitrate are very badly borne by the class of cases under consideration. Probably injections of an iodoform emulsion might prove of some benefit. Operative intervention will not infrequently be indicated. The special operation called for must depend on the condition. Gradual dilatation, internal urethrotomy, perineal urethrostomy, evacuation, curetting, and cauterization of abscess-cavities, and even at times amputation may be of service. Whatever operative treatment may be undertaken, the importance of keeping up hygienic treatment must not be overlooked. A. L. Chute (Boston Medical and Surgical Journal, October 1, 1903).

URINARY HYPERACIDITY.

The writer calls attention to this condition and to the necessity of its proper recognition and treatment for many reasons. In the first place, it is by no means rare, as shown by the fact that we have met with upward of twenty cases within the past three years. In the second place, the condition is frequently misinterpreted, and in the majority of cases erroneously treated, as shown by the fact that more than half of our cases have been diagnosticated as cystitis by one or more physicians, a diagnosis which may lead to the most deplorable results in cases where irrigations and topical applications are advised unless the technique is absolutely perfect, and under any circumstances such treatment is absolutely wrong and unnecessary in this condition, and never does good. In the third place, if the condition has been present for a long period of time, con-

gestion and irritation of the trigonum are likely to occur, which renders the treatment more difficult and the hope of a rapid cure less favorable.

For these reasons it seems most important that urinary hyperacidity should be recognized as a cause of symptoms simulating cystitis, and if the acidity of the urine were tested in such cases we feel sure that the early diagnosis could be made and the proper treatment—medicinal, dietetic, and hygienic—could be inaugurated so that a rapid cure could be brought about, and the patient be spared much unnecessary discomfort and pain, besides being removed from the possibility of developing a true cystitis by an erroneous diagnosis and improper treatment. Thomas R. Brown (New York Medical Journal and Philadelphia Medical Journal, November 14, 1903).

UTERUS, RETRODEVIATIONS OF THE.

The writer recommends shortening of the uterine sacral ligaments, the procedure being carried on in the following manner: After freeing all adhesions and completing the necessary toilet of the adnexa, the uterus is brought strongly forward by the aid of a tenaculum forceps inserted in the fundus. This maneuver brings the utero-sacral ligaments into prominence and each is transfixed, five or six cubic millimeters from its attachment to the uterus, with a needle carrying a medium fine silk ligature. Midway between the sutures and the uterus the ligaments are again pierced with a suture. After slightly relinquishing the hold on the tenaculum, traction is made on the sutures. The first, or higher, one is drawn downward toward the uterine attachment and anchored close to its origin to the uterus. The lower one is drawn upward toward the sacro-iliac junction and attached to its fellow. Thus

the ligament is folded on itself as in Mann's operation on the round ligament. A 1 to 500 solution of bichloride of mercury should be applied to the edges of the folds to destroy the epithelium and cause adhesion; but care should be taken to wipe away any excess of the solution. The ligaments must be shortened only enough to place the cervix in an easy, elevated position. To aid in folding the ligaments, hæmostatic forceps may be used to advantage for grasping the traction suture close to the ligament. The operation is completed by whipping together the folds with fine catgut. The operation of itself is sufficient to hold the organ securely. However, as a matter of precaution, the wound ligament should be shortened by one of the standard methods. No operation for the cure of this affection is complete, however, without due attention to all complications, such as damaged pelvic floor, lacerations of the uterus, endometritis, etc. Shortening the utero-sacral ligaments is believed by the author to be an ideal method for the cure of retrodisplacement. The operation is simple and is usually easily accomplished. It is productive of no danger of bowel obstruction or pregnancy disorders: two very important points to consider in making up one's mind as to the best operative procedure. A. P. Stoner (*American Journal of Obstetrics*, October, 1903).

UTERUS, RETROVERSION OF THE.

The treatment of retrodeviations favors fecundation in sterile women. In recent, mobile deviations, the pessary may be employed with success. The period of genital involution is truly the psychological period for the pessary. Where the perineum is intact and there is no lesion of the adnexa, the Alexander operation is the one of choice.

When there are adhesions to the adnexa, laparotomy is indicated, followed by simple abdominal fixation and transfixion of the round ligaments. In the case of multiparæ where the perineum is torn, fixation should be associated with plastic operations upon the cervix, vagina, and perineum. In the case where retroversion is present and complicates pregnancy, medical, manual reduction of the deformity should be practiced. If this does not suffice to free the uterus from the pelvic cavity, celiotomy should be resorted to and the round ligaments should be shortened intra-abdominally. M. Morissette (*Medical News*; from *La Gynécologie*, June, 1903).

WORK, THE MASTER-WORD IN MEDICINE.

The master-word in medicine, as in every other sphere of human effort, is *Work*. It is not only for the acquisition of knowledge that work is necessary, but for the building of character. This inner education is more important than that which is got from teachers and from books, for without knowing much of his art a practitioner may have endowments of head and heart that make the little he does know go very far in the community. On the other hand, as Professor Osler puts it, anyone may become an active practitioner without ever having had sense enough to realize that throughout life he has been a fool.

In professional education the first step is that the student should be interested in his work. This, with not a few, is a difficulty that is never overcome. Professor Osler seems to us to pass rather lightly over this matter, which lies at the root of many failures in the case of practitioners as well as students. If medicine is adopted simply as a trade, the study and the practice of it are alike the

dreariest drudgery. To most the beginnings are distasteful, if not actually repulsive. The student will soon, however, come to love his work as he applies himself strenuously to master it, for, as Joubert has well said, one learns to like any task, however irksome it may have been at first, when one can do it well. Professor Osler attributes the greater seriousness of the medical students of the present, as compared with those described in the recent life of Sir Henry Acland, to the more practical way in which they are taught; it is also, we think, due to the higher standard of general education now required of candidates.

Professor Osler insists on the importance of system in work. To the average sensual man the acquisition of systematic habits is not easy, and want of system has even come, like bad writing, to be regarded by many as a mark of intellectual superiority. Professor Osler urges that each hour of the day should have its allotted duty. By the cultivation of system and of concentration, the habit of work is formed and strengthened by exercise. Lord Russell of Killowen ascribed his success in life to his power of concentrating all his faculties on the matter in hand, whether it was the reading of a brief or the eating of an oyster. This is the secret of all successful men; whatever they do, they do it with their might.

Professor Osler rightly holds that work with reasonable limitations and under proper conditions is seldom a cause of physical or mental breakdown. But, like other counselors, he warns students against worry. He agrees with Carlyle that "our duty is not to see what lies dimly at a distance, but to do what lies clearly at hand." He advises medical students to take no thought for the mor-

row. The day's work should suffice; they must banish morbid fears about examinations, nor must they consider too curiously of the event in thinking of their future. The precept is virtually that of Sydney Smith, who was never tired of urging people to take short views of life. The advice is unquestionably sound, and is applicable to practitioners not less than to students. The difficulty is to follow it; to many the injunction not to worry is like a recommendation not to feel pain. The tendency to worry should, however, be treated as a temptation, and resolutely suppressed.

To men engaged in the fierce struggle of medical practice we commend Professor Osler's advice to seek for mental recreation in the best literature. A habit of daily converse with the best minds of all ages will give them repose from the anxieties and vexations of their profession and make them indifferent to the manifold petty annoyances of life. Do what we may, we cannot always bend circumstances to our will. Quarrels will be thrust upon us; slander will undermine our reputations; disappointment and even failure must occasionally be our portion. Let us act in the spirit of Carlyle's song:—

The world will wander its own wise way;
I too will go by mine.

Or, as Professor Osler expresses it, let us cultivate the gift of taciturnity and consume our own smoke with an extra draught of work, so that those about us may not be troubled with the dust and soot of our complaints—golden words, which contain the marrow of all practical wisdom; they should be graven on the hearts of all whose lifework is a constant struggle against disease, folly, and wickedness. *Editorial* (British Medical Journal, November 7, 1903).

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

The following resolution was offered by Dr. S. P. Collings, of Hot Springs, Ark., at the Memphis meeting:—

WHEREAS, The value of perfect sight and hearing is not fully appreciated by educators, and neglect of the delicate organs of vision and hearing often leads to disease of these structures, therefore, be it

Resolved, That it is the sense of the Mississippi Valley Medical Association that measures be taken by boards of health, boards of education, and school authorities, and, where possible, legislation secured, looking to the examination of the eyes of all school-children, that disease in its incipency may be discovered and corrected.

Books and Monographs Received.

The editor begs to acknowledge, with thanks, the receipt of the following books and monographs:—

MEDICO-CHIRURGICAL TRANSACTIONS. Published by the Royal Medical and Chirurgical Society of London. Volume the Eighty-sixth. 1903.

NINETEENTH ANNUAL REPORT OF THE BUREAU OF ANIMAL INDUSTRY, FOR THE YEAR 1902. United States Department of Agriculture, Washington, D. C. 1903.

THE TREATMENT OF CERTAIN MALIGNANT GROWTHS BY EXCISION OF THE EXTERNAL CAROTIDS. The Samuel D. Gross Prize Essay. By Robert H. M. Dawbarn, M.D., Professor of Surgery and Surgical Anatomy in the New York Polyclinic Medical School and Hospital, Visiting Surgeon to the City Hospital, New York, etc. Svo, pages xiii-192. Extra Cloth, Price, \$2.00 net, Delivered. Philadelphia, F. A. Davis Company, Publishers, 1914-16 Cherry Street.

A TEXT-BOOK OF PRACTICAL GYNECOLOGY. For Practitioners and Students. By D. Ted Gilliam, M.D., Professor of Gynecology in Starling Medical College, Columbus, O.; Gynecologist to St. Anthony and St. Francis Hospitals, Columbus, O.; Fellow of the American Association of Obstetricians and Gynecologists; Member of the American Medical Association, of the Ninth International Medical Congress, and of the Pan-American Medical Congress; Honorary Member of the Northwestern Medical Association; Consulting Gynecologist to Park View Sanitarium, etc. Royal Octavo, Pages xvi-634. Illustrated with 350 Engravings, a Colored Frontispiece, and 7 Full-Page Half-tone Plates. Extra Cloth, \$4.00, net; Half-russia, \$5.00, net, Delivered. Philadelphia, F. A. Davis Company, Publishers, 1914-16 Cherry Street.

A Case of Diabetic Intra-ocular Lipemia in which the Blood was Examined During Life. By W. Hale White, M.D., F.R.C.P.Lond., London, Eng. 1903.—Was it Wise for the American Medical Association to Change its Code of Ethics? By D. W. Cathell, M.D., Baltimore, Md. 1903.—Case of Splenomedullary Leukemia Successfully Treated by the Use of the Röntgen Ray. By N. Senn, Chicago, Ill. 1903.—A Scalp Face—A New Plastic Operation. By N. Senn, Chicago, Ill. 1903.—The Proper Perineal Prostatectomy Incision. By N. Senn, Chicago, Ill. 1903.—Subcutaneous Drainage in the Surgical Treatment of Hydrocephalus Internus. By N. Senn, Chicago, Ill. 1903.—The Treatment of Chronic Catarrhal Deafness (Otitis Media Catarrhalis Chronica). By G. W. Hopkins, Cleveland, O. 1903.—Tabes in the Negro. By d'Orsay Hecht, Chicago, Ill. 1903.—The Value of the Peristaltic Movements of the Intestines as Elicited by Auscultation in the Diagnosis of Nonpenetrating Wounds of the Abdomen, with Remarks on the Diagnosis in General. By O. C. Gaub, Pittsburgh, Pa. 1902.—The Importance of the Surgical Treatment of Chronic Middle-Ear Suppuration. By E. B. Dench, New York. 1903.—Mechanical Vibration as a Physical Agent in the Treatment of Disease. By F. H. Morse, Melrose, Mass. 1903.—An Operation for Cholecystotomy. By W. W. Lynch, Plano, Texas. 1903.—The Rest Treatment: When Indicated and how Conducted. By J. M. Taylor, Philadelphia. 1903.—The Medical Expert Witness. By G. W. Wagoner, Johnstown, Pa. 1903.—Tuberculosis of the Female Genitalia and Peritoneum. By J. B. Murphy, Chicago, Ill. 1903.—Dermatomyositis. By F. Forelheimer, Cincinnati, O. 1903.—Mercury: Its Administration Hypodermically in Syphilis. By William F. Bernart, Hot Springs, Ark. 1903.—Are "Headache Powders" Prepared from Coal-tar Derivatives as Dangerous as is Sometimes Claimed? A Résumé of Reported Fatal Cases; also of the Court Decisions in Cases of Damage Suits. By Richard V. Mattison. 1903.—Le Coryza Atrophique, est-il une Affection Autonome? Diagnostic et Traitement. Par le Dr. E. J. Moure, Bordeaux, France. 1903.—The Antiseptic and Germicidal Properties of Glycerin. By M. J. Rosenau, Public Health and Marine-Hospital Service of the United States, Washington, D. C. 1903.

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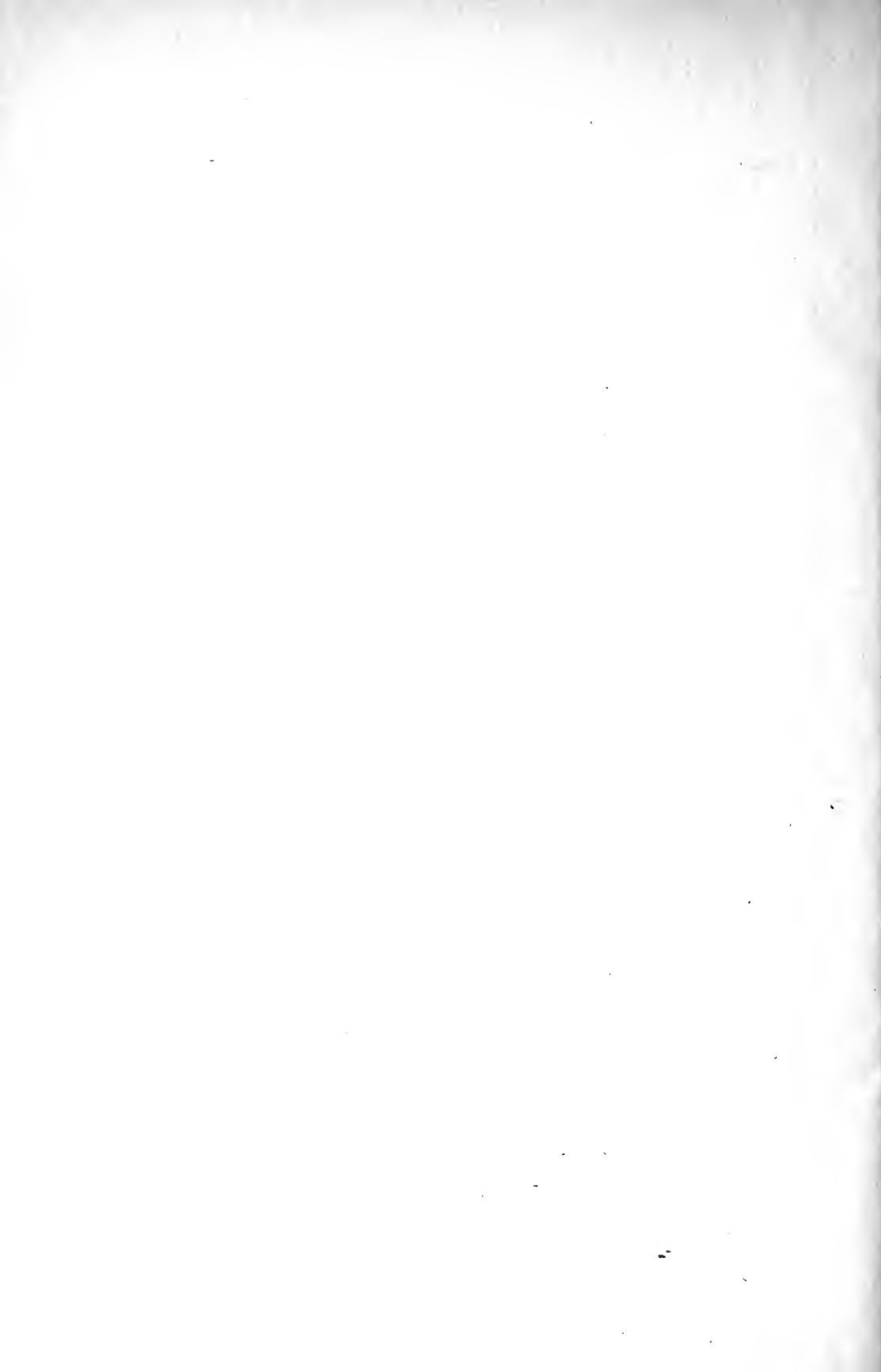
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